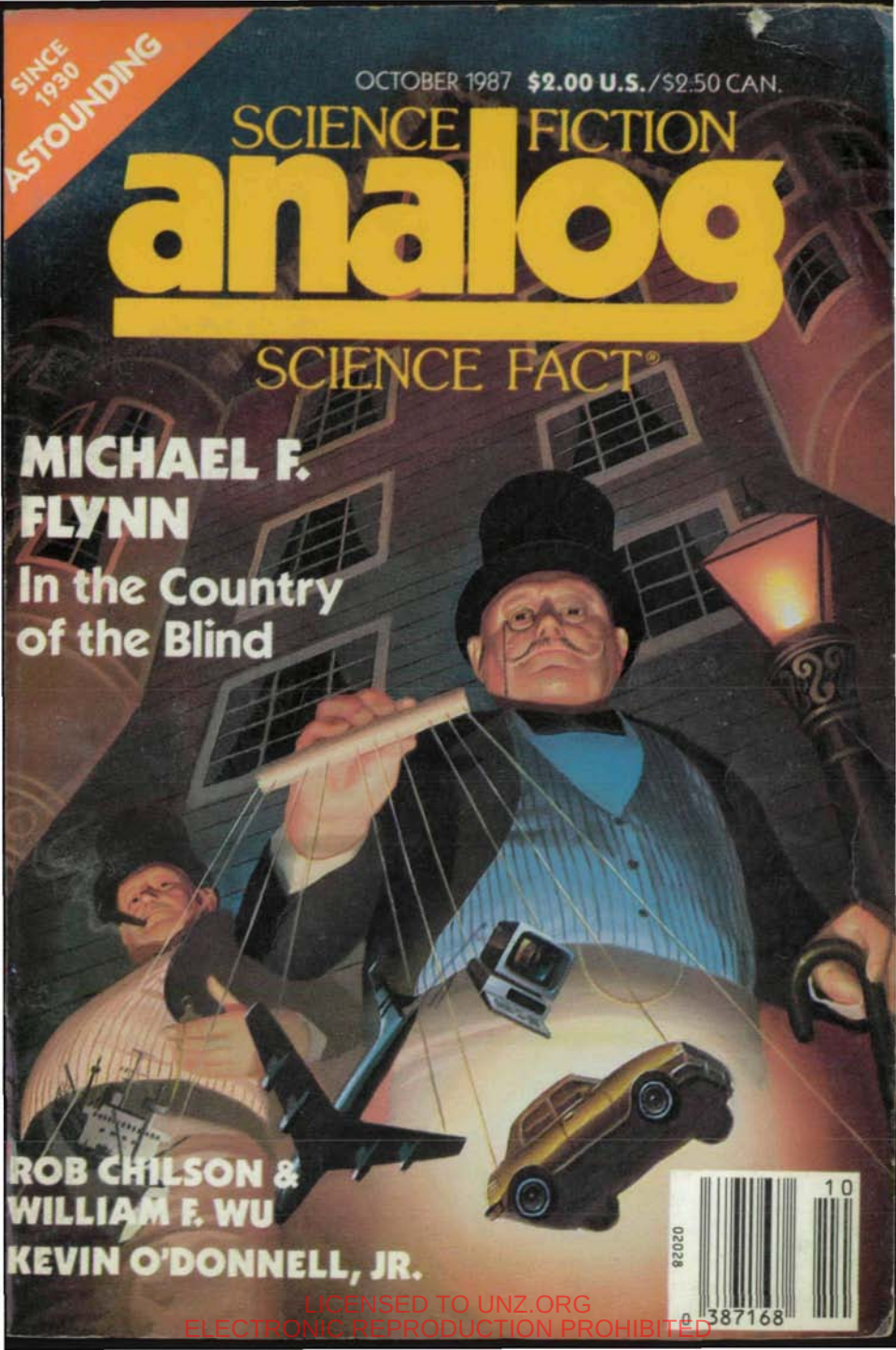
SINCE 1930
ASTOUNDING

OCTOBER 1987 $2.00 U.S./$2.50 CAN.

SCIENCE FICTION analog SCIENCE FACT®

MICHAEL F. FLYNN
In the Country of the Blind



ROB CHILSON & WILLIAM F. WU

KEVIN O'DONNELL, JR.

02028 10
0 387168

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WATERSONG

Mary Caraker

A moving story of a race's struggle to survive when their world is disrupted by forces beyond their control.

The watersongs held the pattern of life, guiding them from their early days as swimmers through landing and adulthood. And it was the watersongs which had always seen them through the final change, when they returned to the waters.

But now, the warmth from one of their suns was gone and the waters turned cold—and the old songs held no answers. The female Embri abandoned the old ways and carefully reared her young herself. Yet when the beautiful and cunning Nithrin declares this heresy, nothing less than further catastrophe will prove to her that the race must adapt... or perish.

Cover art by Joe DeVito
0-445-20512-1/$2.95 (In Canada:
0-445-20513-X/$3.95)

Questar

Science Fiction/Science Fantasy

© Warner Books 1987

SWIMMERS BENEATH THE BRIGHT

M. Coleman Easton

A brilliant new novel from the author of *Masters of Glass*, *The Fisherman's Curse*, and *Iskilr.*

The Founders of Safehold had perfected the race to resist the alien threat—ready against the arrival of *mankind's ancient enemy. Yet they never dreamed that* man's fate would rest on an aging cyborg, a curious *historian... and the most beautiful and brave swimmer* beneath the bright eyes of the Founders.

"Charm, wonders, a tale of simplicity wrought with the craft of a master: M. Coleman Easton leaves us wanting more but leaves nothing wanting."
—**David Nixon, *Fantasy Review* on *Masters of Glass***

Cover art by Victoria Poyser
0-445-20456-7/$2.95
(In Canada:
0-445-20457-5/$3.95)

AT BOOKSTORES EVERYWHERE

POPULAR LIBRARY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The heroes of the far future are the daring captains who cross the galaxy with the rarest cargoes of a hundred worlds.

The *Star Traders* game brings you the excitement of travel and trade, as two to six players race for wealth. In the end, only one player will be named the Imperial Trader.

Skill and planning are needed to locate your stations. But the "Trader's Luck" cards make every trip a chancy one. You can lose a cargo — or gain prestige and Imperial favor!

The *Isaac Asimov Presents: Star Traders* game is available at your favorite toy, hobby or book store for $19.95.

If your local store doesn't carry *Star Traders* you can order it by mail. Add $1.55 for postage and handling. Texas residents please add $1.44 sales tax. Please allow four weeks for delivery. Our catalog is free.

STEVE JACKSON GAMES
Box 18957-J Austin, TX 78760

Star Traders is a trademark of Steve Jackson Games Incorporated. *Isaac Asimov Presents* is a trademark of Davis Publications, Inc., used under license. All rights reserved.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

L. RON HUBBARD

AUTHOR OF THE GIANT BESTSELLER "BATTLEFIELD EARTH"

"Marvelous satire by a master of adventure."
— ANNE McCAFFREY

"A thriller packed with lust, laughs, adventure and murderous intrigue." — LITERARY GUILD

What happens when billions of tons of ice from the rings of Saturn are sent hurtling toward Moscow? And what becomes of Jettero Heller when he abducts the Emperor of the Voltarian Confederacy during a daring solo raid into the heart of Palace City?

Fly down to your nearest book store and find out in the captivating, pulse-pounding science fiction thriller: DISASTER! Get the long-awaited eighth volume of the best-selling Mission Earth dekalogy, L. Ron Hubbard's latest and biggest block-buster of them all....

A Literary Guild alternate selection

Buy your copy today!

MISSION EARTH **VOLUME 8**

DISASTER

$18.95 in hardback. Wherever fine books are sold. Bridge Publications, Inc., 1414 N. Catalina Street, Los Angeles, California 90027

Copyright © 1987 Bridge Publications, Inc. All rights reserved.
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

analog

130 10 110

Vol. CVII No. 10
October 1987

Next Issue on Sale
September 8, 1987

$19.50 per year in U.S.A.
$2.00 per copy in U.S.A.

Serial

IN THE COUNTRY OF THE BLIND, Michael F. Flynn, Part I of II ____ 10

Novelettes

NO DAMN ATOMS, Rob Chilson and William F. Wu ____ 86
THE MILLION DOLLAR DAY, Kevin O'Donnell, Jr. ____ 150

Science Fact

HUNTINGTON'S HANDLE, Mark E. Peeples, Ph.D. ____ 72

Short Stories

THE I OF THE BEHOLDER, Joe Fischetti ____ 110
WORLDWRECKERS, Laurence M. Janifer ____ 130
CATALYST, Rick Cook ____ 144

Probability Zeroes

OCCIDENTAL INJURY, Arlan Andrews ____ 70
WHAT'S A NICE GIRL LIKE YOU . . . , Jerry Oltion ____ 108

Reader's Departments

THE EDITOR'S PAGE ____ 4
IN TIMES TO COME ____ 71
ON GAMING, Matthew J. Costello ____ 85
THE ALTERNATE VIEW, John G. Cramer ____ 125
THE REFERENCE LIBRARY, Tom Easton ____ 179
BRASS TACKS ____ 187
THE ANALOG CALENDAR OF UPCOMING EVENTS ____ 192

Cover by Alan Gutierrez

Joel Davis, President — **William F. Battista**, Publisher

Stanley Schmidt
Editor

Tina Lee
Assistant Editor

Indicia on Page 6

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Editorial

FINAL FRONTIERS

Stanley Schmidt

"In the gospel according to *Star Trek*," said the announcer introducing a segment of a *National Geographic Explorer* television show, "space is the final frontier. Not so: the oceans offer yet another frontier."

In one sense, at least, he was right. Anyone who thinks that space is the *only* frontier remaining to be explored by humans lacks a realistic appreciation of the size and diversity of his own home planet. There is indeed at least one region of that planet whose surface has barely been scratched by mankind. Sylvia Earl, the marine botanist whose deep-sea explorations were the focus of that documentary, summed it up with uncommon vividness and accuracy: "Many people have the impression that the planet is fully explored, that we've already been to all the forests and climbed all the mountains. But in fact most of the forests have yet to be seen for the first time."

Which is true. After thousands of years of effort by millions of people, most of the *land* on Earth has been at least superficially visited, and (thanks to aircraft and satellites) essentially all of it has at least been seen from a distance. But what lies under the oceans is essentially unseen (and consequently "out of mind") except for the few individuals who go there. Even they can see no more than a few cubic meters at a time, and only a few widely scattered places have so far been visited at all. Yet the oceans cover more than twice as much of the planet as do all the land masses put together; and they are very much a three-dimensional realm, inhabited from the sunlit surface to black depths extending appreciably farther below than the highest land-mountains extend above. The things that live in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

them, and the ecological communities they form, are at least as richly varied as those that live in air. Just a handful of years ago a completely new kind of ecosystem, fundamentally different from anything ever seen before, was discovered at the mouths of geothermal vents on the ocean floor. New species of plants and animals are discovered on virtually very halfway serious undersea expedition. Reflect that the part of Earth *above* water includes the rain forests of Africa and South America, cities like New York and Baghdad, the tundra of Alaskan plains and Alpine summits, deserts from Saharan to Sonoran, the Okefenokee Swamp, the giant sequoia groves of California, the icy barrens of Antarctica, and many more others than you'd want me to list here. Then try to grasp the fact that comparable diversity exists in the oceans, on a still larger scale and most of it as yet unseen by human eyes, and you may get just an inkling of the extent of the frontier yet remaining here on Earth.

And yet . . .

If that exercise leads you to think, "So who needs space?," you've missed a larger point. It's worth the effort to gain a realistic perspective on just how thoroughly our own planet has or has not been explored—but it's also worthwhile to continue the effort and put *that* in perspective. To say that "The last frontier is not space, but the deep ocean" goes much too far.

Certainly the deep ocean is a vast and largely unexplored frontier, and quite possibly the last one on this planet—but it's far, *far* from being the last one anywhere. Even if a massive effort were mounted to get the oceans as thoroughly explored as the land, once that job was done, space would still be waiting—and as a frontier, that one monumentally dwarfs all the lands and seas on Earth put together. Space, after all, does not just mean Earth's stratosphere, or the Moon, or even the asteroids. Those are goals for now, but they are the merest beginnings of the whole space venture.

Remember all that diversity in the lands and seas and skies of Earth—and then remember that Earth is a *small* planet, as planets go, and only one of a couple of dozen bodies of more or less comparable size in this solar system alone. You could drop it into the Great Red Spot on Jupiter and never find it again.

Try to imagine all the things that could exist under the clouds of a planet *that* size!

And then remember that there are well over a hundred billion stars in this galaxy alone, a goodly percentage of which very likely have planets. Not all of those planets are places where human beings could live, of course (at least without technological aids). The range of astronomical variables is too broad, and the requirements of human physiology too narrow. But a place does not have to be hospitable to be interesting. Men and women have explored places they would not want to live in the past, and they will do so in the future. (They will also *learn* to live in places that on first encounter seemed too harsh. Northern Europe was once in that category; now Antarctica has permanent settle-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ments, and it should not be too long before the lunar surface and the L4 and L5 points of the Earth-Moon system do, too.) Even if you restrict your attention to planets enough like Earth to support humans without too much difficulty, that may mean millions or even a billion planets *in this galaxy*. Every one of them will be a *world*, as big and rich and varied as the one where our species was born and raised—and every one will be *different*.

The oceans may be the last frontier on Earth. But beyond that will be space, for a long, *long* time—not just another and largely empty layer of Earth, but a new "sea" in which all of Earth is like a grain of sand, and every grain of "sand" is like another Earth. Each of those millions will have as many and as rich frontiers as not only the oceans which aquanauts are now exploring here, but all those *plus* all the land frontiers our ancestors have been exploring

STANLEY SCHMIDT ..... Editor
TINA LEE ..... Assistant Editor
EMY ETERNO ..... Editorial Assistant
RALPH RUBINO ..... Corporate Art Director
TERRI CZECZKO ..... Associate Art Director
ANTHONY BARI ..... Junior Designer
DENNIS DOYLE ..... Junior Designer
CAROLE DIXON ..... Production Manager
ROBERT J. ALLEN ..... Production Assistant
CYNTHIA MANSON ..... Director, Subsidiary Rights
FLORENCE B. EICHIN ..... Manager, Contracts & Permissions
VEENA RAGHAVAN ..... Public Relations Promotions Manager
LOUISE MUGAR ..... Circulation Director/ Retail Marketing
JAMES R. CAULKINS .... Circulation Planning Director
LAURA GUTH ..... Circulation Director/ Subscriptions
CHRIS DORBANDT ... Newsstand Operations Manager
RISA LUND ..... Advertising Services Manager

First issue of Astounding January 1930. ©

JOEL DAVIS
President

FRED EDINGER
Senior Vice President
Finance

PAULA COLLINS
Senior Vice President
Circulation

CARL BARTEE
Vice President
Manufacturing

STEPHEN POLICOFF
Assistant Vice President

Published continuously since 1930.

WILLIAM F. BATTISTA
Publisher

ADVERTISING OFFICES NEW YORK
(212) 557-9100

Analog Science Fiction/Science Fact (Astounding) is published 13 times annually by Davis Publications, Inc. at $2.00 a copy in U.S.A., $2.50 in Canada. Annual subscription $19.50 in the U.S.A. and possessions, in all other countries, $24.90 payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. Canadian 3rd class postage paid at Windsor, Ontario.

© 1987 by Davis Publications, Inc., all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope, the publisher assumes no responsibility for unsolicited manuscripts or artwork.

POSTMASTER: SEND FORM 3579 to ANALOG SCIENCE FICTION/SCIENCE FACT, (ASTOUNDING) P.O. BOX 1936, MARION, OH 43306
IN CANADA RETURN TO 628 MONMOUTH ROAD, WINDSOR, ONTARIO N8Y 3L1
Editorial and Advertising: Analog Science Fiction/Science Fact, 380 Lexington Avenue, New York, NY 10017
Subscriptions: Analog Science Fiction/Science Fact, P.O. Box 1936, Marion, OH 43306 ISSN 0161-2328
call (614) 383-3141 for problems with your subscription.

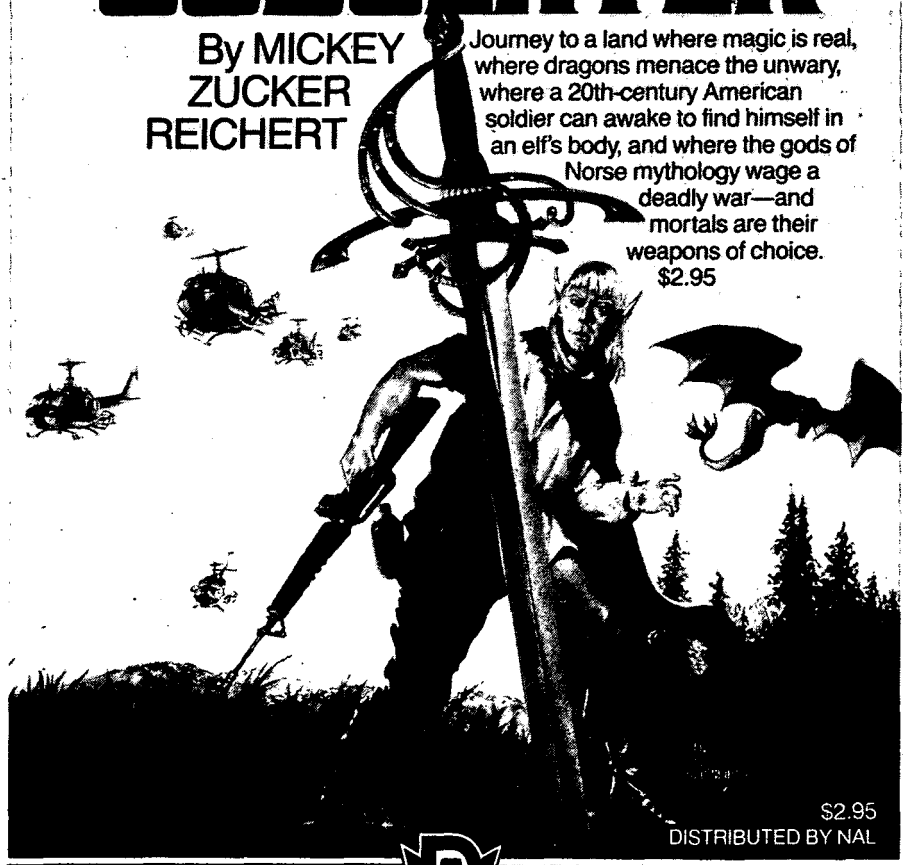
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Torn from a world of blood and death,
flung through time and space
suddenly his enemy isn't the Viet Cong–
but an ancient god of destruction!

GODSLAYER

By MICKEY
ZUCKER
REICHERT

Journey to a land where magic is real, where dragons menace the unwary, where a 20th-century American soldier can awake to find himself in an elf's body, and where the gods of Norse mythology wage a deadly war—and mortals are their weapons of choice.
$2.95



$2.95
DISTRIBUTED BY NAL

DAW FANTASY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

through all the thousands of years of human history to date. Forget the monotonous (and impossible) "jungle worlds" of unimaginative or lazy writers; *real* worlds will be far more interesting—and there will be an awful lot of them, no two alike.

And beyond them? Well, besides more or less Earthlike planets, there are all those more exotic ones, like Jupiter—and not like Jupiter, for so much variation in planetary parameters is possible that many planets elsewhere will be quite unlike anything in the particular galactic suburb we happen to inhabit. And then there are the stars themselves, and the not-quite-open spaces *between* stars and planets, and a weird menagerie of objects which have not yet even been properly identified.

And our galaxy is only one of a very large number . . .

Somewhere there may really be a last frontier—but I would not be so brash as to try to say what it is. Certainly the ocean isn't it, except in an extremely local sense; and even space, as people commonly think of it now, is only the threshold to something so much larger that it includes the equivalent of all previous frontiers billions of times over. It may be that eventually our descendants will venture to other galaxies, and find them as rich and varied as their ancestors found the worlds of one, each galaxy as full of varied worlds as each world is full of habitats and lifeforms. I don't know what level of exploration might lie beyond that, but I'm not prepared to say there won't be something.

We've had "last frontiers" before, you know. It just may be that any "last frontier" only seems so because the people looking at it haven't yet learned to see as far as the next. ■

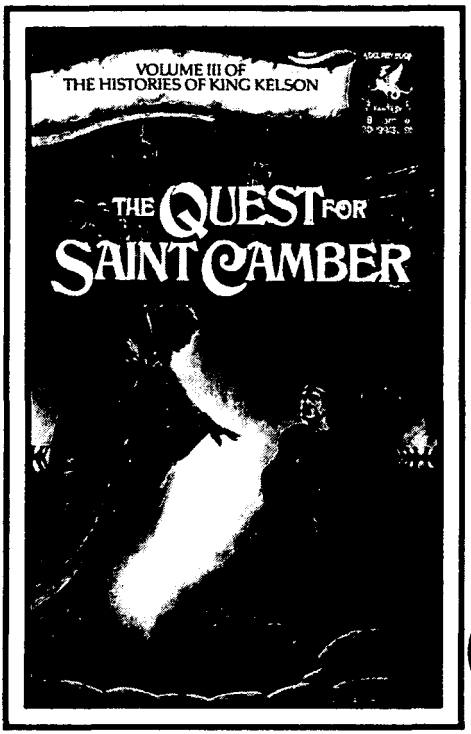
● In art nothing worth doing can be done without genius; in science even a very moderate capacity can contribute to a supreme achievement.

Bertrand Russell

● I am sorry to say there is too much point to the wisecrack that life is extinct on other planets because their scientists were more advanced than ours.

John F. Kennedy

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



Finally in Paperback!

THE QUEST FOR SAINT CAMBER

VOLUME III OF THE HISTORIES OF KING KELSON

KATHERINE KURTZ

Time after time, the legendary Camber—one-time Saint of the half-magic race of Deryni—had intervened in the affairs of young Kelson, King of Gwynedd. Yet Camber was known to have died two hundred years before!

Now Kelson set forth to discover if the Saint lived only in memory...or in other guises as well...

"AN INCREDIBLE HISTORICAL TAPESTRY OF A WORLD THAT NEVER WAS AND OF IMMENSELY VITAL PEOPLE WHO OUGHT TO BE!" ***—Anne McCaffrey***

On Sale in September $3.95
Del Rey

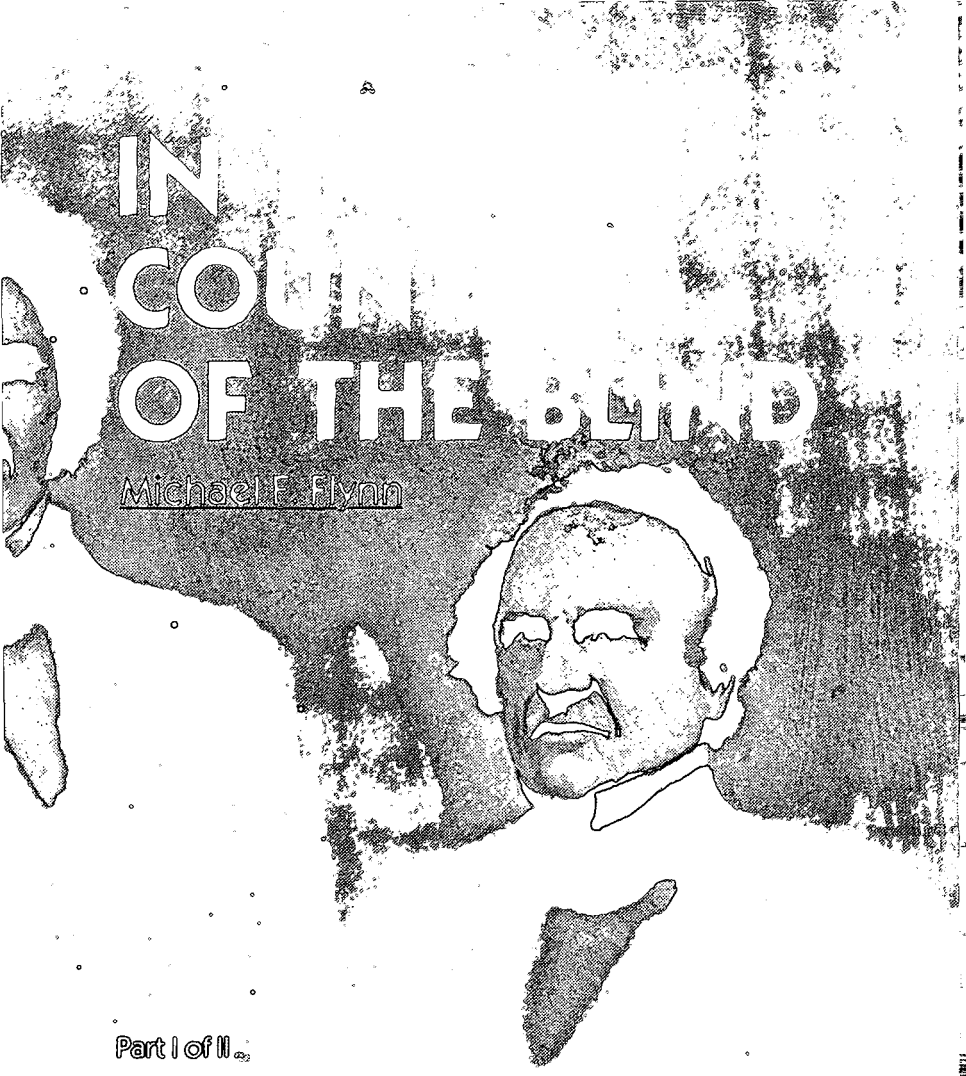
DEL REY #1 in Science Fiction and Fantasy
Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO NNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

IN COUNCIL OF THE BLIND

Michael F. Flynn



Part I of II

Our knowledge of history is necessarily based on fragments of information—which may mean some of the most important facts have not yet even been suspected by historians!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THEN

The rain fell in torrents, beating a staccato rhythm on the cobblestoned street. The man waited beneath the hissing gaslamp in the middle of the block. The rain ran off his broad-brimmed hat and down the back of his neck. It was a hot, sticky rain; not a bit of coolness in it. He endured it stoically. He hitched the waterproof leather briefcase under his arm, changing his grip for the hundredth time. Far off to the south he heard booming; but whether of guns or of thunder, he didn't know.

A drumming of hooves from G Street. The man turned expectantly; but it was a troop of cavalry that turned the corner: Horses stepping high, striking sparks off the paving with their hooves. Leather straps and belts gleamed wetly in the dusk and the metal of sabers and spurs and bits jangled like an Arab belly dancer.

He read their cap badges as they rode by: Third Pennsylvania. He raised his arm and huzzahed and their captain saluted him smartly with his quirt.

He watched them out of sight, headed for the Potomac bridges, and who knew what fate? When he turned his attention back to the street, the landau was there, waiting. The nigh horse blew his breath out and rolled his eyes at him. Startled, the man took a step backward, while the driver, a shapeless lump on the lazyboard, pulled on the reins to calm the beast.

The door opened and Isaac poked his head out, smiling sourly. "Well, Brady," he asked in his broad New England accents, "Will you climb in, or do you like the rain so much?"

Brady didn't bother to answer. He stepped into the cab and sat beside the older man. The upholstery smelled damp and musty. Everything in Washington did. Brady shook the rain off his hat, and wiped his face with his neckerchief. The carriage started with a jerk.

He saw Isaac glance covertly at the briefcase, and snorted. "Impatient, Isaac?" he asked. His Indiana voice twanged like a jaw harp. "My train arrived two hours ago. You could have met me then, at the station."

"Ayuh," Isaac agreed readily. "Could have. Didn't."

Brady grunted and looked out at the passing houses, colorless and grey in the pouring rain. They were headed toward Georgetown. Abruptly, the texture of the ride changed. The bouncing and rattling gave way to a sticky, sucking sound. Brady smiled. "I see they still haven't finished paving the streets yet."

"Ayuh. Nor finished the capitol dome, neither." Isaac looked at him, then looked away. "Great many things still unfinished."

Brady let that lie and they rode a while in silence.

"Town's danged spy-crazy," said Isaac after a while. "Too many comin's and goin's. Draws attention. I was followed last week, I think. Naught to do with the Society, but the Council thought 'twere best we not meet at the station."

Brady looked at him. That was as close to an apology as he was ever going to get from the New Englander. He sighed. "'Tain't important," he said.

Isaac reached over and tapped the briefcase with his index finger. "But this is," he said. "Tell me square, Brady, and on the level. Is it what we expected?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Brady didn't answer him directly. He stroked the leather with his palm, feeling the wetness. "Three weeks of calculations," he said. "Three weeks, even with Babbage engines. There were six of us, working in two teams. We used numerical integration and some of the new theory that's come from Galois's papers. When we were done, we switched and checked the other team's work." He shook his head. "There's no mistake."

"Then he must die."

Brady jerked his head around and looked at Isaac. The New Englander was drawn and pale. The age-spots were dark against his parchment-like skin. Brady nodded and Isaac shut his eyes.

"Well, that be news should please some on the Council," he said, gazing on some inner landscape. "Davis and Meechum. Phineas, too. His mills are idled, with no cotton coming North."

Brady frowned. "Are they allowing their personal interests to . . ."

"No, no. They are guided by the equations, just as we are. Slavery had to go. We all agreed, even our Southron members. The equations . . . They showed us what would come to pass if it didn't." Isaac shivered, remembering. "That was why we . . . took measures." The old man's face closed up tighter. "They will see the need for this action, as well."

He opened his eyes and looked at Brady. "And if they bow to necessity with smiles and we, with sorrow; why, what difference?"

"Damnation, Isaac! It should never have come to this!" Brady slapped the briefcase, a sharp sound that made Isaac blink.

"Don't want his blood on your hands, do you? Well, theah's blood enough already. This War . . ."

"Was an accident. A miscalculation. Douglas should have won. He knew how to make deals. He could have ended slavery and made the South love him for it. Popular sovereignty and the Homestead Act. That would have done it."

"Maybe," Isaac allowed. "But Buchanan vetoed the Homestead Act out of personal spite for Douglas, something we couldn't foresee. And we didn't know then how determined Yancey and the other secessionists were. After that fiasco at the Charleston convention, the election was thrown wide open. The Republicans . . ."

"That backwoods buffoon!" said Brady angrily. "His winning changed everything! Panicked the South good; but how could we have calculated it? The man failed at everything he ever attempted. He failed twice in business; had a nervous breakdown; was defeated for House Speaker, then for reelection; was defeated for *land-officer*, of all things. He ran for the senate twice and the vice presidency once and lost the nomination all three times. Hell's bells! He even lost the presidential election!"

"Not in the electoral college," Isaac pointed out. "And he did have a plurality."

"The man is a statistical anomaly!"

Isaac chuckled. "That's what really bothers you, isn't it?"

Brady framed a tart reply, then thought better of it. Beating a dead horse wouldn't make it run faster. He slouched in his seat. "Be that as it may be, *this* is different!" He slapped the briefcase again.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"A calculated act; not a calculated risk."

Isaac nodded slowly. "Though I doubt a corpse cares much whether 'twere done in by accident or design. Still, needn't worry about yourself. We never act directly. A word heah. A word theah. Washington's always been Confederate in her heart. Someone will act."

"Aye. But we will bear the guilt."

"Why, so we will! Was there ever any doubt? Did you doubt it when you took the Oath?"

Brady looked away, out the window. "No."

They were silent again, listening to the carriage wheels rolling through the mud. The rain drummed the roof of the landau.

"And what if he does *not* die?"

Isaac just wouldn't let it be. Brady glared at him.

"And what if he does not die?" Isaac persisted.

Brady sighed. He hefted his briefcase, then dropped it into Isaac's lap. "Read it yourself. It's all there. The secondary path from the fifteenth yoke. We have clandestine medical reports on him and his whole family. And on Ann Rutledge, as well. His former law partner, Billy Herndon, has been dropping sly hints to whomever will listen. His wife is certifiably insane, save no one has the guts to say so aloud. It's congenital in at least two of his sons. Damn!" He closed his eyes tight. His hands clenched into fists. "I've never liked any task less than the reading of those reports." He relaxed slowly and looked at Isaac. "There's no mistake. He will go mad before his new term expires. Already he has . . . bizaare dreams."

"And the madness, and the disease it springs from, will discredit his efforts at reconciliation."

"Aye. Leading to victory for the Radicals and probable impeachment for medical reasons. There will be permanent military occupation of the South, stifling of technological progress there, growing resentment among the whites, sporadic rioting and racial pogroms, followed by repression and a new Rebellion in 1905 that will be overtly supported by at least two European Powers. That, too, is in the calculations."

Isaac smiled thinly. "Then, 'tain't so much a matter of blood on our hands, but how much, and whose."

Brady chewed on his knuckle. The skin there was frayed, almost raw. Isaac watched him thoughtfully for a moment, then turned his attention to the window. The silence between them lengthened.

"Gloomy night," said Isaac finally, still gazing at the dark outside the landau. "Fittin' somehow."

"We haven't built Utopia, have we, Isaac?"

Isaac shook his head. "Not yet. Give it time, boy. Give it time. Rome weren't built in one day, neither. The Society's too small to move the world by much; but it will be bigger someday, *if* we persevere." He turned and faced Brady, his eyes sharp and piercing. "Just remember, Brady. Famines. World-wide wars. Weapons deadlier nor any Gatling gun and ironclad. It's all theah on the chahts. You've seen 'em. In less than a century there will be explosive shells more powerful than 20,000 *tons* of guncotton, or of this new stuff, dynamite.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

DISCOVER NEW WORLDS

With These New Anthologies from Longmeadow Press

Scientific wonders

Isaac Asimov's Wonders of the World

Edited by Kathleen Moloney & Shawna McCarthy

Speculate on the world's greatest wonders with these 15 thought-provoking stories from Gregory Benford, Robert Silverberg, Joan Vinge and other great science fiction authors.

$7.95/#7534

Analog's world of alien creatures

Analog's Expanding Universe

Edited by Stanley Schmidt

Join authors Isaac Asimov, Poul Anderson, Hal Clement and eleven others as they take a spin around the planets with 14 astounding journeys to other worlds.

$7.95/#7535

Pick them up today at your nearby Waldenbooks store. And while you're there, check out the Waldenbooks Otherworlds Club, an out-of-this-world book club with free membership, a monthly newsletter and special savings for science fiction and fantasy fans. Sign up today!

America finds it at

Waldenbooks®

Books • Audio • Video • Magazines • Book Clubs • Special Orders
Over 975 stores nationwide.

To order call toll-free 1-800-543-1300, Operator #390

(Alaska and Hawaii call 1-800-545-1000, Operator #390)

SK291

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

God's wounds! The Petersburg mine held only 8,000 *pounds* of black powder! Imagine that multiplied five-thousand-fold!" He shook his head. "I faired those curves m'self, Brady. They're exponential. If we've any hope of tempering them in time, we must act *now!*"

The driver called to his horses and the landau pulled up before a modest Georgetown brick house. Brady opened the door and made to step out, but Isaac laid a hand on his arm.

"Theah's something else, isn't theah, Brady Quinn? I know you well, and you're concealing something."

The wind blew the rain into the cab. Brady would not look at Isaac. "Young Carson has developed a new algorithm, based on a children's game, of all things. It . . . Well, it changes everything after the twenty-ninth yoke."

Isaac scowled, not understanding. "The twenty-ninth . . ? I don't know what you mean."

"Isaac, you've been like a father to me for twenty years. Please, don't ask me."

Isaac backed away from him. "What is it, Brady?" There was uncertainty in his voice, and the beginnings of fear. "I've put my life into this work. I built this Society, Brady. Phineas and I and old Jed Crawford. We read between the lines of Babbage's book. Saw what could be done. Saw what *must* be done. We laid out the first ten yokes. If everything after the . . . No! Tell me, Brady!"

Brady told him and the old man stared, open-mouthed. Brady closed his eyes briefly in pain, then he left the landau and walked to the front door of the townhouse. He looked back once and saw the old man weeping.

NOW

Sarah looked at the window and decided it was too damned dirty to look *through*. Glancing around, she saw a rag in the corner of the empty room. It was probably just as filthy as everything else in the house. There were mouse droppings scattered about, cobwebs, fragments of plaster. In places, the ribs of the walls showed through the broken plaster.

With a sigh of disgust, she walked over and picked up the rag and shook it. A spider crawled out. She watched it go its way.

"Just how long has this house been vacant?" she asked.

"Five, six years." That was Dennis, her architect. He was rapping on the walls, looking for supporting beams. He stopped and stared at the doorframe. He ran his fingers over the miter joints and nodded in approval. "Good, solid work. They sure knew how to build back then."

"The good old days," said Sarah absently. "When women knew their place."

Dennis looked at her. "They still do," he said. "Just more places, is all."

She snorted. Returning to the window, she ran the rag over it. The grime was stubborn. It had had years in which to settle in. She managed to clear a circle in the middle of the pane and peered out at Emerson Street. "Can we refurbish the place? Bring it up to Code and all? That's what I need to know. This area's going to be the next to boom, and I want

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to be here first." She had been late getting in on Larimer and on Market. She was going to be first here, by God. Let the other developers follow *her* for a change.

She could look straight across the street at the second floor windows there. Those houses had the same basic construction as this one. There was a man standing in one of the windows, stripped to the waist, drinking something out of a can. He saw her looking and waved an invitation.

Ignoring him, she craned her neck to the left. She could just make out the dome of the state capitol, shining golden in the afternoon sunshine. The downtown skyscrapers, though, blocked the view of the mountains. No matter, she thought. The Brown Cloud blocks it for everyone. She watched the traffic at the corner, counting cars-per-minute.

She stood away from the window and clapped the dust from her hands. Dennis had left the room. She could hear him tapping away down the hall.

"How does it look?" she called. She found her clipboard and jotted a few notes on it.

"Utilities look good," he answered. "No computer links, naturally; but we can put those in when we upgrade the rest of the wiring."

She followed his voice down the hall and found him in one of the other bedrooms. He was poking at a hole in the wall. He looked at her.

"There's still piping in the walls for the old gas mantles." He shook his head. "This must have been a swank place a hundred years ago. There's a servants' stairwell down the end of the hall." He pointed vaguely.

"I know. One of the old-time silver barons built the place; but he had to sell out during the silver panic a few years later. I've got a list of all the previous owners in my PC at home. The workmanship is superb! If I could find the sonofabitch who painted over the parquet flooring on the main staircase . . ." That *did* make her mad. She loved good workmanship, no matter what the job; and that staircase had been the work of a master joiner. This area had once been upper class; though not so upper class as "Humboldt Island" over by Cheesman Park on the "good" side of Colfax. It was funny how neighborhoods went in cycles like that.

Dennis nodded. "I know what you mean. When they made this place into a boarding house and subdivided the rooms, they paneled right over the original walls. You should *see* the wainscoting! Here."

He pulled on a section of drywall and it came away. Bits of plaster and gypsum fell to the floor, along with some nails and loose scraps of paper. The old wall behind it was in bad shape. The wainscoting was partially destroyed and there were holes in the plaster; but she could imagine what it must have looked like when it had been new.

The papers on the floor caught her eye and she stooped and picked them up. Habit. It was silly to think about tidying up a dump like this, but habits were self-booting programs. She looked at them. A yellowed newspaper clipping and a torn sheet of foolscap with a handwritten list of dates.

"What are those?" asked Dennis.

"Looks like crib notes for a history test and an 1892 story from the old *Den-*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ver Express." She handed the foolscap to Dennis and read the clipping. "A gunfight," she told him. "Between two cowboys on Larimer Street. Neither cowboy was scratched; but a bystander, an old man named Brady Quinn, was killed."

She frowned. Quinn? Where had she seen that name before? It had been recently, she was sure. She shrugged. Well, never mind. It would come to her eventually.

"Odd sort of crib notes."

She looked at Dennis. He was scowling over the list of dates. "What do you mean?"

"Well, the entries are in two different handwritings, for one thing. The earlier items are in the old Spencerian style."

"Someone started the list," said Sarah. "Then someone else continued it."

"And this, up at the top. What does it say? Biological? Diological?"

She glanced where he pointed. "Cliological. Cliological something. "It's smudged. I can't make it out."

"That's a big help. What's 'cliological?' "

She shrugged. "Beats me. I never heard the word before."

"And the mixture of entries is odd, too. Famous events and obscure events all jumbled together. How does the nomination of Franklin Pierce or the election of Rutherford Hayes or Winfield Scott's military appointments belong with the election of Abraham Lincoln or his assassination, or the sinking of the Lusitania? Or . . . Hello!"

"What?" She moved behind him and read over his shoulder. He pointed. "Brady Quinn murdered," she read.

"Yep, your friend Quinn is right in there with Lincoln and Teddy Roosevelt. And with von Kluck's turn, whatever that was. 1914. Must have been World War I."

"No kidding? And 'Frederick W. Taylor, *fl. ca.* 1900.' Who was he?"

Dennis shook his head. "There are a half dozen entries that I never heard of."

"Well, that's modern education for you. They just don't teach us what they used to teach our great-great-grandparents. Our own teachers were damn near illiterate, and ignorant to boot."

"They all had education degrees, though."

She snorted. "Which meant they knew all there was to know about teaching, except the subject."

"When I was in graduate school," Dennis remembered, "the education prof across the hall from us told me that that wasn't important." She looked at him and he shrugged. "True story."

"That's the way folks are. 'If'n *I* don't know about it, it ain't important.' Ask any engineer about sonnet writing; or any poet about stress and shear. You'll get the same answer." She wondered, as she often did, that her own life had been so different. "Personally, I think it all started with Thomas Dewey's whole-word method of reading. What a fiasco! English isn't Chinese and you can't teach it that way. It just doesn't work. No wonder half the kids in this country grow up functionally illiterate."

Dennis chuckled. "Or ask any architect about factor analysis. There's a note at the bottom, where it's torn. 'Try orthogonal factor analysis . . .' "

"Oh, I know what that is. It's . . ."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"A SPELLBINDING TALE THAT COMBINES OUR DEEPEST FEARS WITH OUR MOST CURRENT ONES."*

Into the OUT OF

ALAN DEAN FOSTER

Bestselling Author of the *Spellsinger* Series and the Blockbuster Novelization of *Alien*

They're coming to get us...

A swarm of spirits with awesome power. Stealing into our world through a gap in the Out Of. Hell-bent on destroying all of humankind.

"Memorable characters—people you'd like to meet and monsters you hope you never will." —United Press International

*Mike Resnick, author of *Santiago* and *Tales of the Velvet Comet*

NOW IN PAPERBACK AT ALL BOOKSTORES.

WARNER BOOKS

A Warner Communications Company

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She snapped her fingers trying to remember. "It's a statistical method that sociologists use to detect socioeconomic groups. Each group is defined by a cluster of mutually correlated factors."

Dennis raised one eyebrow and looked at her. "Oh, yeah?" He folded the list and tucked it in his shirt pocket. "Maybe I'll check some of these things out. See what they are. Did you notice that each entry was marked with a 1, 2, or 3? Maybe those were three 'orthogonal factors.' "

"I noticed that whoever wrote the list thought that Brady Quinn had been murdered."

He cocked his head. "You're right. But in the newspaper story, it sounded like an accident."

"Maybe people back then used murder to mean any kind of killing."

They left the room and took the servants' stairs to the main floor. It was dark in the stairwell and their shoes crunched on dirt and broken plaster.

"If education is so lousy," Dennis asked on the way down, "how did you get to be so smart?"

She stopped and looked at him. In the dimness the architect was only an indistinct shadow. "Because I wouldn't *let* them cheat me!" she answered angrily. "I've had to fight for everything I've ever had. Because of my sex. Because of my color. I wouldn't *accept* a second-rate education!"

She remembered the time her fifth grade class had made a field trip to the Museum of Science and Industry. That had been more years ago than she cared to remember. Oh Lord, the South Side of Chicago. There she was, a little girl in cornrows who could barely read. There had been an exhibit there of early calculating machines, old key-set mechanisms. There had been a walk-through model of a human heart. There had been a rock that had been brought back from another world!

It was like being doused with a bucket of ice-water. It had awakened her with a shock. There was an enormous and fascinating world out there, *and her teachers were not telling her about it!*

And so she had explored it on her own. She had begun cutting classes, sneaking off at first to the public library then, in later years, to the University of Chicago library. She'd had to con her way in there: No one would believe a little girl had come there to *read*.

It was all there: Law, medicine, African music, physics, Chinese history, statistics, German philosophy, computers. An incredible variety of human accomplishments. Some friends who knew what she was doing had asked her what good it was. What would she *use* it for? She had treated the question with scorn (as she had treated the apathy that had prompted it). Use? She wasn't looking for *training*, she was looking for an *education*. Training could come later, in any of dozens of skills and professions.

She had passed all her school classes, of course. She always showed up for tests and such. Most of her teachers, she was convinced, had deeply resented her success because she had achieved it in spite of them. But there had been two . . . Ah, *those* had been teachers!

Habits are hard to break. She was still stretching herself with night classes and professional seminars. She had discov-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ered in herself a native talent for computer programming, though she hadn't cared to make it a career. Then, a few years ago she had taken an executive survival course. From high tech to low tech. Mountain climbing. Shooting rapids. Living in the wilderness. She had learned how to handle knives and bows. For graduation, they had dropped her off somewhere in the High Country with nothing but the clothes on her back. She had learned a lot about who she was during those two grueling days.

"I didn't mean to sound patronizing," Dennis's voice cut into her reverie. "Christ, you know me, Sarah. I had . . . Well, not the *same* problems, obviously; but at prep school, they didn't expect the idle rich to want to tackle anything 'hard.' "

"Yeah, I know," she answered. "It ain't yo' fault yo' was bo'n white and rich. I'm sorry I took it the wrong way." She turned away from him. "Let's get out of here."

They paused on the sidewalk outside while Dennis sketched some ideas on his pad. She knew better than to try and peek. He'd throw away a dozen concepts before he kept one to show her. Over the years she had learned to trust his judgement.

Sarah brushed at the dirt on her clothing. She noted how cars lined the entire block. She'd have to do something about parking when she developed the area.

Dennis tossed the sketchpad into the back seat of his Datsun. "Friday for lunch?"

She nodded absently. She was wondering how much of the block she could buy up before anyone else noticed and the prices jumped. Maybe she could run it through a couple of dummy corporations.

"Got a name for it."

"Hmmm? For what?"

"For the project. Brady Quinn Place. We can tie in the historical aspect. The turn of the century with the turn of the century. The 1890s meet the 1990s. Solidness and elegance combined with efficiency and technology."

She thought about it. "Not bad," she admitted.

"It's a natural. There's a real nostalgia in this town for that era. Cowboys. Baby Doe Tabor. Mattie Silks. Dave Cook."

"I'll think about it. Find out *who* Brady Quinn was. We wouldn't want to use his name if he was only some two-bit tin-horn."

"Why not? Mattie Silks was a madam."

"Ah, but in a woman, sleaze is respectable."

She drove her Volvo through the diagonal streets of downtown Denver, past the steel and glass towers of the energy and telecommunications companies. She wondered what would happen to such complexes when networking out of the home became common. Her own project envisioned making each home accessible to the DataNet and to a community satellite dish. The technoyuppies would love that!

It had been a long day. She had planned to drive out to Colfax because she liked to watch for commercial property possibilities; but at the last minute she changed her mind and cut down

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Speer to the Sixth Avenue Expressway. That was a straight run west, non-stop practically to the Hogback, with the Front Range dead ahead the whole way.

The afternoon clouds were rolling over the mountains. She gauged them thoughtfully, then rolled back the sunroof anyway. What the hell. She was a risk-taker. She liked the feel of the breeze and, if it did rain, she could close it up fast enough.

Later, in her home, sipping a brandy in front of the fire, she realized where she had seen Brady Quinn's name before. She set her snifter to the side and pushed herself out of the sofa. A log in the fire snapped, sending a wave of pine scent through the room. Feline P. Cat, her Manx, saw her move and followed her to the terminal desk. He watched intently as she called up a file and scrolled through it. When she found the entry, she nodded in self-satisfaction.

Once, a very long time ago, Brady Quinn had owned the house on Emerson Street. He had bought it from the silver baron in 1867, and sold it to a man named Randall Carson in 1876. From there, through several intermediate owners, it had come to her.

"That makes me his 'descendant,' " she told her cat. "Maybe Dennis is right and we can use him as a hook for the project."

Feline blinked his agreement.

"Maybe the files at the *News* or the *Post* can help me. What do you think, Fee?"

The cat yawned.

"You're right. The *Express* and the *Times* aren't around any more. Maybe the Western History Room at the DPL has something. And the tax records at the City and County Building." She jotted some notes to herself. She'd hated doing research during her stint as a reporter. Now she was looking forward to it. It was a break in the routine. *When it's your job,* she thought, *it's never fun.* She decided to real-time the various repositories, since some of the material she was interested in hadn't been databased into the Net yet. Nobody was about to use up valuable bytes with hundred-year-old real estate records!

Morgan Grimes was in the city room of the *Rocky Mountain News* when Sarah walked in the next morning. She got off the elevator and walked around the pillars past the reception desk. The city room was a study in mauve, burgundy, and gray, with the desks arranged in "pods" of six. No one else was there except the copy editor, who glanced up briefly from her position at the head of the U of copy desks before bending back to her work.

Morgan was talking on the phone, his face twisted in concentration, holding the earpiece with his left shoulder while he tapped notes into his terminal. When he saw her coming he said something into the phone, then covered the mouthpiece with his hand.

"Yes, young lady, may I help you?" He was grinning like a fool.

"Stuff it, Morgan. I just came in to use the library a while."

"Library," he groused. "It's a morgue, dammit. I don't care who says different." He looked at her. "That's it, hunh? Just using our morgue? Not looking for your old job back?"

She laughed. "Not even on a bet.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ART BY FRANK FRAZETTA

L. RON HUBBARD
presents
WRITERS *of The* FUTURE
VOLUME III

Soar into the unique and different worlds of SF's freshest, newest creators! Discovered by the acclaimed international Writers of The Future talent search, these are the startling, provocative vanguard of the award-winning next wave of science fiction and fantasy new ideas!

"...One of the best collections of new science fiction I've ever seen!" said **Arthur C. Clarke** on Writers of The Future.

Scores of other major SF figures and commentators have echoed his opinion. Now delve into the latest and best of this widely-praised series!

Monsters and starships, time-travellers and aliens, robots and rebels...all abound in these pages. Plus practical how-to advice on writing by Gregory Benford, Frederik Pohl, Jerry Pournelle...and a major statement on art and communication by best-selling master L. Ron Hubbard himself!

"The best of the fresh talent..."
—GENE WOLFE

"The best, the very best..."
—MIDWEST BOOK REVIEW

14 all-new stories! Essays and contest information! And a stunning new Frank Frazetta wrap-around cover painting! Buy your copy today! $4.50 wherever fine books are sold!

Copyright © 1937 Bridge Publications, Inc. All rights reserved.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Give up the office suite, the Volvo, the tailored dresses, the condo in Aspen? For what? Starvation wages, unpredictable work hours, and last-minute assignments out of town."

"For the thrill," he answered. "For the glamour. *The Front Page*. *All the President's Men*. That sort of thing."

"Sure, I remember the glamour. Obituaries. Press conferences. Media 'opportunities.' Staged demonstrations." She tried to peek at his VDT but he hit a button and it went blank.

"Uh-uh. That's a no-no."

"What are you working on?"

"The Pulitzer, of course."

She looked at him, unsure if he were kidding. She never had been able to tell during the days they had teamed together. *I wonder if he's still using the same access code*. She had cracked it years ago, just for practice; but she had never actually used it. Now, she thought about tapping into his files through the Net. *Leave him a sarcastic message. Teach him not to play cute with me*. She thought she could hack it, even though the reporters' terminals were not always connected to the Net. There were ways to mouse into any system.

She looked around the city room. "Everybody out on assignment?"

"Uh-huh. Except Kevin. He's on another book promotion tour. Should be back next week. I suppose you heard about his latest best seller."

"Yeah. Easy life. Well, tell them all I stopped and said hello."

"They will be thrilled beyond words. Actually, it has been good seeing you again. You always were a pretty good . . ."

"*Don't say it, Morgan.*"

". . . news-hen. The morgue's where it always was; but it's all on discs now, not microfilm. That wouldn't bother you, though, would it?"

"Sure wouldn't," she said as she left. "I was born with a microchip on my shoulder."

Dennis's appointment was at 15:00 hours and he arrived at the offices of the DU history department precisely at 14:59. He looked around uncertainly until a plump, moon-faced woman stuck her head out of one of the offices.

"Mr. French?" she asked.

"Yes, are you Professor Llewellyn? Thank you for seeing me. I know how busy you folks are."

"Not at all. It's just such a surprise when a non-student makes an appointment. Come in and sit down. Gwynneth Llewellyn is my name."

They shook hands. Dennis sat in a worn, high back chair, pulling up his pants legs so they wouldn't bag. He sat erect, with his hands folded across his middle.

He had spent several days reading and talking to people at Metro and CU concerning the list of historical events he and Sarah had found in the Emerson Street house. He was convinced there was a common theme running through all the items. Some principle that defined what went on the list and what didn't. He was annoyed that he couldn't simply glance at the entries and *know* what that common factor was, like he could glance at a building and know what principles the architect had used to make his design decisions. He wasn't sure if that represented a problem with his education, with his own abilities, or

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

with the list itself; but the problem niggled at him, like a stone in his shoe.

Professor Llewellyn planted herself behind her desk and leaned forward on her beefy arms. Her skin was pale, spotted red with freckles. Her cheeks were plump and round. She reminded Dennis of someone's aunt. He half-expected cornbread muffins and cocoa; so he was quite surprised when she took up a corncob pipe and lit it.

She blew a smoke ring, gaging his reaction with a twinkle in her eye. "So what can I do for you, Mr. French?"

He came right to the point. "I am trying to discover the rationale behind this list of historical events." He reached into his vest pocket and pulled out the scrap of paper. He unfolded it and handed it to Professor Llewellyn. Briefly, he outlined how it had come into his possession.

She pulled out a pair of old-fashioned bifocals and perched them on her nose. She gave him a quick apologetic smile and focused on the list, her head tilted slightly back and her lips thrust forward in a pout. As she read, Dennis saw a frown crease her face. When she had finished, she took off her glasses and looked at him. "I take it, you're not interested in knowing what these events are. You can find most of them referenced in any good history text."

He nodded. "And I have been reading to the extent I have time. I'm an architectural consultant and I'm afraid I've simply not the free time to pursue these things to the depth I suspect may be necessary. The people I've talked with so far have given me facts, details. All fascinating. Much of it I hadn't known. I hadn't known, for example," he added, pointing to the list, "that Theodore Roosevelt's nomination as vice president had been engineered by his political enemies, who were trying to finish his career by burying him in a dead-end job."

"Things didn't work out the way they expected," Llewellyn commented.

"No, they didn't. The best-laid plans of mice and men gang aft agley, as Bobby Burns once wrote. At any rate, by now I feel as if I've actually met some of the people on that list. Like Thomas B. Reed, Republican of Maine. He was quite a character. The serenely sarcastic New England Buddha, they called him. He was the most brilliant man in politics in his day, and *should* have been nominated for president."

"Strangely enough, he wasn't."

"But I want more than just facts. I'm looking for insight. Some of those entries are famous. Others are obscure. The sinking of the battleship *Maine* and the nomination of Franklin Pierce don't exactly pop into one's mind together."

She smiled. "No, they surely do not." She scanned through the list again. "I'm afraid even *I* don't know what some of these items are, let alone what they mean. I know about Ambrose Bierce disappearing in Mexico, of course; but who was this Brady Quinn fellow, or Davis Belleau, or Agatha Penwether?"

"Murder victims."

She nodded testily. "Yes, I can read; but what are they doing here with Roosevelt and Lincoln; or with Edison, Dewey, Ford, and Taylor?" She laid the note down and leaned back in the swivel chair. The springs creaked. She puffed on her pipe. "I may be getting

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

an idea," she told him. "Tell me, Mr. French. Do you know who said this: 'Under our system a worker is told just what he is to do and how to do it. Any improvement he makes upon the orders given him is fatal to his success.' "

Dennis shrugged. "I don't know. Lenin? Mao?"

"Wrong. It was Frederick Taylor." She indicated the entry on the list.

"Who was . . . ?"

She pointed the stem of her pipe at him. "Taylor was an engineer at the turn of the century, when American industry was faced with a tide of poorly educated immigrant laborers. Taylor developed a system to boost productivity by separating the planning and the execution of work. Engineers and managers made the plans; foremen and workers carried them out. It ended the old craftsman system, in which the worker planned his own work. It's been the basis of American business philosophy ever since."

Dennis laughed. "Oh, no! And I thought it was Lenin or Mao? That's priceless!"

She laughed derisively. "Just whom do you think those two middle class gentlemen were imitating, revolutionaries? Don't forget that Engels was a factory owner. If you want to see Lenin's State in embryo, study Henry Ford's Company. His Sociological Department 'inspectors' could barge in on employees unannounced at home and question them on their marriages, their finances, and other aspects of their private lives; and Harry Bennett's 'outside squads' were just Brown Shirts writ small. Oh, certainly, both Ford and Lenin had the best of intentions: to improve the lot of the common man; but the management system they developed . . ."

"Now, wait a minute! Lenin wanted power!"

"And Ford didn't?"

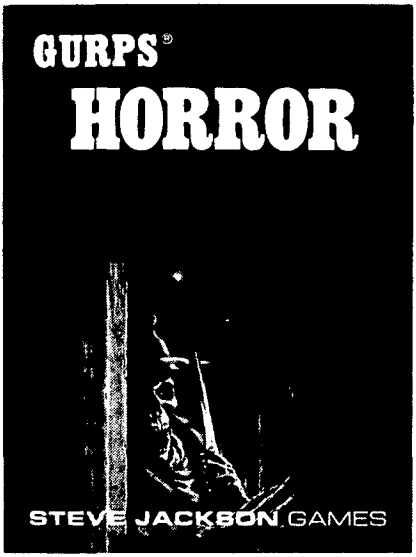
"Henry Ford never had anyone executed," Dennis protested.

"Though Bennett's goons *did* beat up and harrass 'dissidents.' And other employers during the class war did not shrink from killing union organizers. Sometimes with private armies, but more often with government troops. The difference between Ford and Lenin was more a matter of scale than anything else, Mr. French. Governments discourage private enterprise killing; they reserve that power to the state, through warfare and executions. Even corporations must defer to that. However, in the Soviet Union, the Government *is* the Corporation. The whole country is one vast Company Town, with all that implies."

"I beg your pardon?"

"In plain language, the Soviet Union is the largest capitalistic organization on the planet. It's a huge holding company. Look at the parallels. The Party members are the stockholders; the Politburo is the Board of Directors. (Stockholder elections have more in common with Soviet elections than with democratic ones.) The average citizen or employee has no effective say in how the organization is run. A centralized bureaucracy makes five year plans that never work out. Internal criticism is not allowed, although suggestions for improvements are encouraged, provided they are not truly revolutionary. Everyone must be a 'team player,' by which

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



BECAUSE IT'S FUN TO BE SCARED

Vampires. Mad Slashers. Things Man Was Not Meant To Know. Poltergeists. The stuff of nightmares . . .

GURPS Horror, the latest supplement to the *Generic Universal RolePlaying System*, brings you all the spine-tingling thrills of your favorite horror novel or movie, with a frightening difference. This time, they're after YOU!

Included in *GURPS Horror* are complete stats on monsters — from Hollywood's favorites to planet-devouring abominations from other dimensions. This 96-page book includes three complete game backgrounds, psionic powers, and special magical items and powers for the fight against unspeakable terror.

GURPS Horror is available at your local hobby store for $9.95. *GURPS Horror* is a supplement to the *GURPS Basic Set* — you need both in order to play. The *GURPS Basic Set* is $24.95.

If your local game shop doesn't carry *GURPS*, you can order by mail. Add 55 cents for *GURPS Horror* and $1.55 for *GURPS Basic Set* for postage and handling. Texas residents please add 7¼% sales tax. Please allow four weeks for delivery. Our catalog is free.

STEVE JACKSON GAMES
Box 18957-J Austin, TX 78760

GURPS is a registered trademark of Steve Jackson Games Incorporated. All rights reserved.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

they mean: 'Follow the boss's orders' rather than true teamwork. Troublemakers are exiled to Siberia or to meaningless jobs. Or they're terminated." Dr. Llewellyn smiled humorlessly. "An interesting choice of words, that."

"Don't forget the hostile takeovers," said Dennis.

Professor Llewellyn laughed. "That's the spirit!"

"You know, I never thought of it before," Dennis admitted, "but a large corporation *is* run a lot like a socialist state."

"Vice versa, actually. Don't forget which came first."

"Thanks to Frederick W. Taylor."

Llewellyn nodded. "He wasn't the only one; but he was the key."

"So your point is . . ." He let the sentence hang.

"Oh, yes, the list. This is a judgement call, understand. But each of the items on this list, at least the ones I am familiar with, are historical turning points of a rather subtle kind. The events themselves were 'small,' but they had disproportionate consequences."

"I see. Like Mr. Taylor's attempts to boost factory productivity led to . . ."

"Let's call it The Managerial Society."

"How about . . ." He retrieved the list and scanned it. "Oh, Winfield Scott's military appointments?"

"Added a few years to the Civil War. He named mostly Southerners to key posts, you know; which wasn't surprising, since Scott himself was a Virginian. As a result, the Confederacy wound up with more experienced officers. Of course, at the time, no one even knew there would *be* a civil war; and Scott was, and remained, a staunch Unionist. So it isn't as though Scott planned it that way."

"I see." Dennis folded the foolscap sheet and returned it to his pocket. He rose. "I'd like to thank you again for your time. You've been considerable help."

"Not at all," she demurred, shaking his hand.

He turned to go and paused. "Oh. One last thing, if you will. This word in the heading. Cliological. Do you know what it means?"

"Cliological?" she frowned. "No, I never . . . Oh!" She laughed.

"What is it?"

"Clio was the Greek muse of history. Apparently, the writer, or someone, coined the term 'cliology' as a parallel to biology or sociology, meaning 'a science of history.' Perhaps the writer was a science student taking a history course."

Later, as he drove down University Avenue toward his home, Dennis recalled what was written at the bottom of the list. Try orthogonal factor analysis. That sounded terribly scientific. Then he remembered that the list was written in two different hands. Two different 'cliologists?' He wondered what that might mean.

After three years on the Net Watch, Red Malone still did not know the name of his teammate. They had played countless games of rummy and pinochle. They had swapped lies about the women they had known (and a few that they hadn't). They had monitored intelligence during scores of quiet crises, the kind that *never* appeared in the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

newspapers. Red didn't even know which of the Agencies "Charlie" worked for.

And "Charlie," of course, knew as little about Red.

It made sense. To guard against moles, or rogues running unauthorized ops, there had to be two agents on watch at all times. Redundancy. They had learned that from the reliability engineers. The probability that *both* agents would be doubled or turned was much less than for one.

So each of them was there to keep the other honest; and that made it necessary that they be strangers to one another.

Red picked up the clipboard and scanned the log entries for the last two shifts. Most of them were in codes he was not supposed to know. Other Watchkeepers from other Agencies. Idly, he wondered which ones Charlie could read. Everyone had his own code. Red amused himself by trying to crack them. He whistled *East Virginia*, off-key, as he read.

The air conditioner hissed a constant draft. Red always wore his suit-jacket in the Watch-room. He couldn't figure how his companion could sit there in his shirt-sleeves. He shook his head and put down the clipboard. Why couldn't they at least team him with someone who had the same metabolism?

He reached into his jacket pocket and pulled out a well-worn deck of cards. He cut the deck and riffed the two halves together.

The machines hummed in the background. Lights winked on and off. Disk readers buzzed intermittently. Relays clicked. It reminded him of the time he had gone camping. When had that been? Two years ago. Out west somewhere. The nighttime forest had made noises just like the Watch-room, except it had been insects and animals making them. When he had mentioned the similarity to the other campers, they had looked at him strangely.

Now here he sat. Camped out in the electronic jungle. Listening for the sounds of predators. He riffed the deck of cards once more; tapped them on the console desk.

An alarm rang: a soft, insistent beep. He sat upright, suddenly alert. Charlie reached out and hit the cut-off. "What is it?" he asked.

Red played the keyboard and checked the intelligence on his screen. "It's a tripwire. Someone's accessing flies that an agent wanted flagged."

"Yeah? Well, they leave the bait out there and wait to see who nibbles. Who do we notify?"

Red checked his code list. "Umm. Someone named Foxhound."

"Must be a code name."

"No shit?"

Charlie gave him a sour look. "Don't give me any grief. What's the flag and where'd it go up?" He was already busy entering the notification code. The computer would compare his entry to Red's to see if they matched.

Red scrolled the information on his screen. He read off a Net Access Code. Charlie read it back to him.

"The watch-word is . . . uh, 'Quinn,' " he told Charlie. "This is the third time this week it's been tripped by the same user. Well, third time's the charm, right? That's what sets off the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

signal. Sounds like someone running an op."

"Never mind that. What were the CPU codes?"

Red called off the numbers and Charlie confirmed them.

"That last one is where the User is now?" Charlie asked.

"Uh-huh. Know where it's located?"

"No, and I don't care. Neither should you."

"Yeah. Well, the 187- prefix means it's a self-contained system tapping into the DataNet, but not a regular part of it. The next nine digits is a cipher for the zip code. Not too hard to de-crypt once you know what it is."

"Listen to Sherlock Holmes. Look, all we know is the CPU code number. Foxhound or his handler will have the address where it's located. That's their worry. An agent wants to flag something, he's got his reasons. All we do is watch the Net and see if anyone asks for it. We don't know who the agent is. We don't know who the user is. We don't know where the terminal is located or what the watch-word means."

Red chuckled. "Is there anything we *do* know?"

Charlie swiveled his chair around. "Yeah. I know how to play rummy and you don't. You've shuffled those cards enough to wear the pips off 'em. So, deal."

Red flicked the cards with the ease of long practice. "This has been the most excitement we've had in two weeks. My heart is pounding."

Charlie grunted. "Most folks go on the Net, they don't nose around where they shouldn't. You decided yet what you're doing on your vacation?"

Red set the remainder of the deck down between them. He turned over the top card. It was a queen. "Yeah. Camping."

Charlie picked off the deck. "Camping? Thought you hated that stuff."

"I do. That's why I'm going. Self-discipline. Builds character to do something you hate."

Charlie looked baffled for a moment. Then he shook his head sadly. "Next thing, you'll be roasting rats for lunch. You're weird. I ever tell you that? You're weird."

Sarah was in the Western History Room at the Denver Public Library when her beeper went off. She had spent the entire day at the terminal and her eyes felt dry and dusty. Brady Quinn was an elusive man. After selling the Emerson Street house, he had not bought another one, at least not in Denver. In fact, except for a second news article that mentioned him only incidentally, the man had left no trace at all in the local records between the sale of his house and his death, sixteen years later.

However, that second clipping had contained a clue which she had followed to the National Archives, and she was just reading the printout when her beeper went off. The other patrons turned and looked at her. She smiled an apology and went downstairs to use the public phones to call her service.

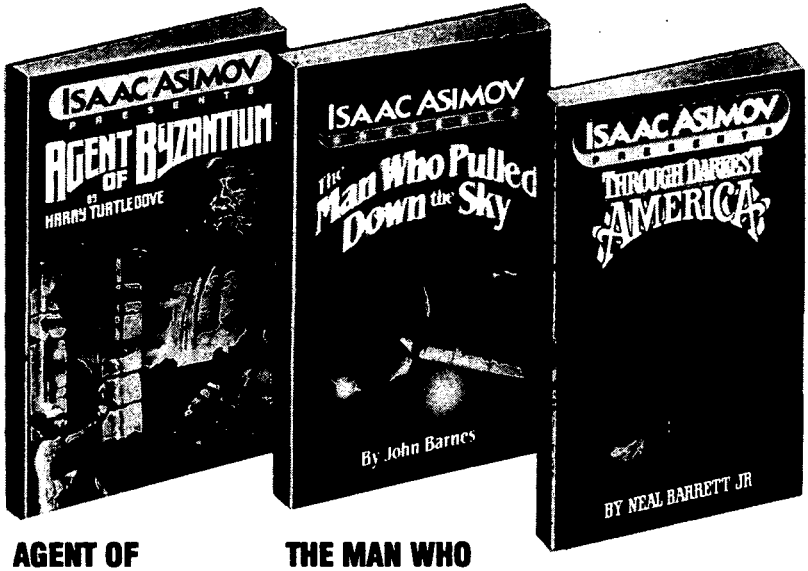
It was from Dennis. If she was downtown and in the mood, his message said, give him a buzz and they'd have dinner together. His treat, at the Augusta.

She never could resist a free meal. She called him back and confirmed the time. Then she climbed the stairs back

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The undisputed master of science fiction today showcases the rising stars of tomorrow

ISAAC ASIMOV PRESENTS



AGENT OF BYZANTIUM
By Harry Turtledove. A world in which the Byzantine Empire did not fall is brought vividly to life in this gripping novel of adventure and intrigue. "Engrossing, entertaining, and very cleverly rendered."—Roger Zelazny
$15.95 (cloth)

THE MAN WHO PULLED DOWN THE SKY
By John Barnes. In the 21st century, the visionary's dream of Earth-orbiting space colonies has become a nightmare. "Will certainly be one of the best hard-sf novels of the year."—Orson Scott Card $15.95 (cloth)

THROUGH DARKEST AMERICA
By Neal Barrett, Jr. "...post-apocalypse America painted in vivid colors on a big canvas. Gritty and savage and not for the squeamish..."—Tim Powers $15.95 (cloth)

At all bookstores

CONGDON & WEED
A subsidiary of CONTEMPORARY BOOKS, INC.
New York • Chicago
In Association with Davis Publications, Inc.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to the third floor to pack her things away.

She stopped in the doorway. There was a man standing by her briefcase, reading her notes. Of all the nerve! "Can I help you?" she asked sarcastically.

The man turned and looked at her. He was tall and rangy, with a thin, prominent nose. There was no embarrassment or surprise in his face. His eyes were dead, without expression. He looked at her with no more interest than if he had looked at the furniture.

"No," he said. "You can't." Only his mouth spoke. The rest of his face remained uninvolved. There was an air of menace about him; an aura of barely restrained threat. It was in his bearing, in the lines of his face. Sarah caught her lower lip between her teeth.

"I'll thank you to leave my things alone," she said, wondering if he would become violent.

The man smiled. It was a cold smile, a brief contortion of the lips into an unaccustomed posture. Then it was gone. That smile chilled her more than any threat could have done.

"I will," he said, "but you won't."

Then he left. He walked straight toward the door and Sarah hastily stepped aside, lest he come too close. He paid her no attention as he walked by.

Sarah looked after his departing figure. She let out a shaky breath.

"He gone?"

Sarah turned, startled. One of the other library patrons stood there. A small, nut-brown woman of indeterminate age, with a wind-weathered face and wearing a denim jacket.

"I tol' him to leave yore things alone," she said, "but he jest looked at me like I was some kinda bug."

Sarah shook her head. "Who was he?"

A shrug. "Ain't never seen him in hear before. Acts like a New Yorker."

"A weirdo."

"Mebbe. Young lady, it mebbe ain't none of my business, but . . . The way he looked at yuh?"

It chilled her just to remember. "What about it?"

"I seen that look once before. I was out riding fences on my spread out to Buffalo Creek. Saw me a diamondback a-staring down a bird. A lark bunting it was. That snake stared at that bird the same way that there fella looked at you."

Sarah swallowed. The ranch woman's description was very apt, she thought. The man had been very much like a snake. "Thanks for your concern," she said. "I'm meeting a friend for dinner; so, if you don't mind, I'll . . ." She walked to the table where her briefcase lay and gathered up her papers. She stuffed them inside and snapped it shut. When she was leaving, though, the ranch woman stopped her again.

"Missy? That snake. Ah didn't stop it. It's nature's way and even snakes have to eat. But, the bird . . ."

"What about the bird?"

"That poor bird jest a-stood there and waited. Never even tried to git away. Jest a-stood there and let that snake strike it." She smiled at her. "Yuh be careful, Missy, y'hear?"

Sarah thought about the man in the library as she rode the electric bus down the Mall. She was still thinking about him when she entered the restaurant.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She saw Dennis wave to her from across the room.

Dennis stood while the waiter seated her, then he resumed his own seat. "A Bristol Cream sherry for Ms. Beaumont," Dennis told the waiter, "and Jameson's, neat, for myself." The waiter left and Dennis turned to her. "What's wrong? You look upset."

"Oh, nothing. Just a little run-in at the library." She told him about the stranger and he shook his head sympathetically.

"The West is getting more and more like the East," he said. "Here, this will take your mind off it." He reached down and brought up his sketch pad. "I thought you might like to look at a few concepts I've come up with for Brady Quinn Place."

She took the sketch pad from him and looked at the drawings he had made. They were good. Dennis's ideas usually were. She especially liked the roof-to-ground atrium on the south wall, with the mezzanine balcony on the second floor.

They batted ideas back and forth for a while over their drinks. Then, after the waiter had taken their dinner orders, the talk turned to Brady Quinn. She was amused to discover that Dennis had also been spending his time unproductively; although his interest was in the list of dates rather than in Brady Quinn himself.

"I see we've both been goofing off," she said. "But, I did find out who Quinn was. He was mentioned in another news story, and it made me think that . . . Well, let me read it to you and you tell me what you think." She unsnapped her briefcase and pulled out a photocopy. "I found it in the *News* for Monday, July 18th, 1881."

A daring train robbery by masked men occurred on Saturday, July 16th, on the Chicago, Rock Island, and Pacific Rail Road, at Winston, near Cameron, Mo. The robbers were six in number and were supposed to be under the leadership of Jesse James. The men boarded the train at Cameron. At Winston, when the train stopped, they stood up in the aisle of a car with drawn revolvers. One of the bandits advanced with a revolver in each hand toward Wm. Westfall, the conductor, and ordered him to hold up his hands. The conductor was slow in complying and was shot through the heart. One of the other bandits shot through the head John McCullogh, a stone-cutter of Wilton Junction, who turned in his seat. The same man then shot and wounded Brady Quinn, retired, a government clerk during the late War. The bandits then went to the express car and overpowered the Express Messenger, who was intimidated into opening the safe, from which $3,000 was taken."

She handed him the clipping. "There's more. The James Gang went after the engineer, too; but he set the brake and crawled out into the pilot and hid."

"Ah, the wild and woolly west," said Dennis. He looked at the photocopy. "Some folks have tried to make the James brothers into heroes. Sure doesn't sound too heroic."

"We only make people into heroes after they're dead, so they won't embarrass the legend-makers." She pointed. "The story said Quinn was a govern-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ment clerk during the war. That must have been the Civil War. So I hacked into the DataNet from the Library and accessed the National Archives in Washington."

Dennis sipped his drink. "Isn't that a no-no?" he asked. He placed his glass down precisely where he had picked it up, exactly matching the wet ring on the table cloth.

"Of course it's a no-no," Sarah said, "It wouldn't be any fun if it weren't. Those files are tough to get into and you *can't* alter or erase them." She paused for a moment while the waiter set their food down. London Broil for Dennis; lobster for her. "Anyway, I found Brady Quinn's employment file. Interior Secretary McClelland appointed him to the post of statistician for special investigations in 1853, on the recommendation of one Isaac Shelton of Massachusetts. His appointment was renewed by each succeeding Secretary down to Usher. After the war, he retired from public life first to his native Muncie, then to Denver. The Pension Office lost track of him in 1876. In fact, I couldn't find *any* trace of him at all between 1876 and 1881, when he was shot on the train."

He arched his eyebrows. "Yes, and then shot again in, what? 1892? Shot *twice* as an innocent bystander? In two separate incidents?"

"That's right. That was my own reaction. Someone wanted to kill him, but wanted it to look like an accident. Quinn is becoming quite a mystery man. He evidently went into hiding in 1876. From whom? Why?"

"A statistician in the Interior Department," mused Dennis. "I can see where a man in such a position would make a lot of enemies." He grinned at his own joke. "Well, it was over a hundred years ago. Whatever it was all about is long over."

Sarah snorted. "Certainly, but the point is, we want to use his name as a theme, not just a label. We can't call the project Brady Quinn Place without telling people why. It might as well be John Doe Place."

"I know it." Dennis pursed his lips and made a steeple with his fingers, as if he were praying. "If I could discover why his death was included on that list of historical events," he said thoughtfully, "that might give us a lead. It seems so out of place." He looked at her. "There *was* a common theme that ran through most of them, you know. They were all trigger events."

"What do you mean?"

"I was talking to a professor at DU just yesterday. That was her analysis. She said that these were instances when the actions of a relative handful of people had disproportionate consequences: Changed the course of history, sometimes obviously, sometimes subtly." Briefly, he summarized his meeting with Professor Llewellyn.

She nodded as she saw his point. "I suppose she knows what she's talking about. It's her speciality, after all. But she credits this Taylor fellow with the communist tyranny? That seems a pretty big accomplishment for an industrial engineer."

"No, no. She only said that Taylor, Ford, Lenin and the others were part of a trend toward the Managerial Society, with decision-making authority vested in a professional, managerial class. You

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SYLVIA PORTER'S PERSONAL FINANCIAL PLANNER DOES MORE THAN MANAGE YOUR MONEY

IT PLANS YOUR FINANCIAL FUTURE TOO

Sylvia Porter, and the editors of Sylvia Porter's Personal Finance Magazine, now combine with all the computer tools you'll ever need to help manage your money on a day-to-day basis and plan your financial future, too. In Sylvia Porter's style, without complicated financial jargon or "computerese".

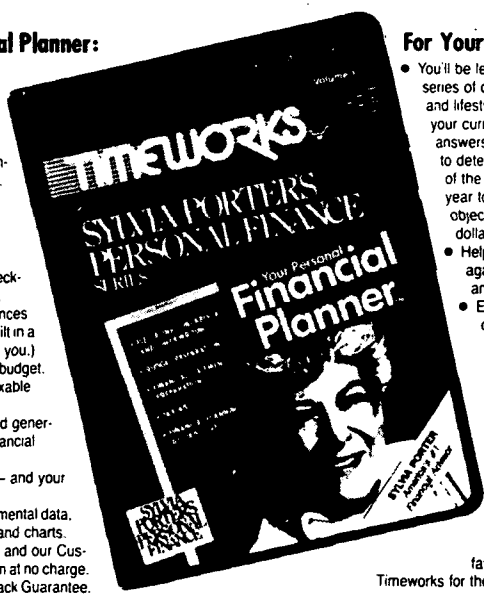
Volume I

Your Personal Financial Planner:

Helps you track your day-to-day financial data, then combines this information with your future financial objectives to produce the most comprehensive and easily-understood financial planning program available.

For Your Day-to-Day Affairs:

- Maintains your electronic checkbook and credit card system.
- Writes your checks and balances your checkbook. (We even built in a calculator and memo pad for you.)
- Prepares and monitors your budget.
- Classifies and tracks your taxable income and expenses.
- Calculates your net worth and generates customized personal financial statements.
- Tracks your financial assets – and your insurance policies.
- Graphically generates supplemental data, such as percentages, ratios and charts.
- You get our Toll-Free Hotline and our Customer Technical Support Team at no charge.
- You get Timeworks' Money Back Guarantee. (Details in each package.)



For Your Financial Future:

- You'll be led step-by-step through a series of questions regarding your life and lifestyle, your financial goals, and your current financial condition. Your answers will enable a computer to determine and print a summary of the amounts you must save each year to meet your financial objectives - in both real and inflated dollars.
- Helps you plan for protection against major medical adversities and other financial setbacks.
- Each program interfaces with others in this series. Your information can be incorporated into letters and reports produced by Timeworks' Word Writer.
- Everything is integrated. You need to enter data only once.

Available for Apple, IBM and Commodore computers.

Moderately Priced - from your favorite Dealer or contact Timeworks for the Dealer closest to you.

Next in this integrated series:
Your Personal Investment Manager.

Other Timeworks Programs: The Evelyn Wood Dynamic Reader • Word Writer with Spell Checker • Data Manager 2 • SwiftCalc with Sideways • Business Systems • Swiftax • Cave of the Word Wizard • Wall Street

TIMEWORKS®

More power for your dollar.

TIMEWORKS, INC., 444 Lake Cook Rd., Deerfield, IL 60015. 312-948-9200

1984 Sylvia Porter's Personal Finance Magazine Co. & Timeworks, Inc. All rights reserved

From America's #1 Financial Adviser

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

know what I mean: Just follow the procedures. Anything not compulsory is forbidden." He looked at his steak, frowned, and cut it vigorously. "Bureaucrats," he said, bitterly. He looked back at Sarah. "Did I ever tell you? When I was working as a civil engineer, before I took my architecture degree, my company was taken over by a conglomerate. The new owners sent in new managers to run things. Their own people, not a single one of whom was an engineer."

"Let me guess. They were MBA's with financial backgrounds."

"Bingo. My own *supervisor* didn't know the first thing about strength of materials or Proctor density. You know what he said? 'A professional manager can manage any business or function, wherever good management is needed.' Straight out of the textbooks."

"So, what happened?"

"What do you think? Efficiency went down; waste went up. There was one hundred percent personnel turnover within one year. The company went from a money-maker to a loser. Just so a corporate staff miles away could hold all the reins of power in their hot little, fast-track hands."

"If centralization worked all that well, Russia would export wheat."

He chuckled. "Well put. Come to think of it, Professor Llewellyn did say Russia was run like a corporation. I guess I'm still bitter about it. But, tell me: Do you notice the similarities between teachers and managers? They've both dropped their adjectives."

"Come again?"

"We talked about teachers the other day, remember? Well, the problem is that when teachers and managers became *professional* teachers and *professional* managers, they forgot how to be *history* teachers or *engineering* managers."

"Judging by the results," Sarah laughed, "someone wants us to be ignorant and unproductive. Maybe Thomas Dewey and Frederick Taylor were in a conspiracy."

"There are two problems, though. There are plenty of 'turning points of history' that are *not* on the list."

"And Brady Quinn is."

"Right. That's the big puzzle. How did his death or the deaths and disappearances of other unknowns change the course of history?"

"Little events with big consequences," she mused, dipping her lobster into the melted butter. An idea struck her and she pointed her fork at Dennis. "Wait a minute! Nothing important happened because Quinn was killed."

He looked puzzled. "Well, yes. That is the problem."

"No, that's the *answer!* Nothing important happened *because* Quinn was killed. Sure, that must be it. Take . . . Oh, take the *Challenger* disaster of a while back. It was pretty straightforward to trace the sequence of cause and effect. All the way back to the Professional Managers. Remember how that one vice president told his engineering manager to 'take off your engineering hat and put on your management hat!'? But suppose those rocket engineers had been listened to. You know, the ones who warned against launching. Suppose the launch had been postponed. Everyone grouses about it. Later, when the weather is warmer, they launch suc-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cessfully. Because the warning is heeded, no disaster happens. A small action with a big consequence."

"Okay. But that creates a different sort of problem."

"What's that?"

"*How did those events get on the list?* It's easy to say that because Brady Quinn was killed, or because Ambrose Bierce disappeared, something important failed to happen; but how did anyone know it? *How do you trace the fault-tree of something that never occurred?* Have you ever tried to prove something from the absence of negative evidence?"

"Professional Managers do it all the time. That's why they launched the *Challenger*, remember? The engineers couldn't *prove* that anything bad would happen." She dabbed at her lips with her napkin and looked at her watch. "Look, Dennis, I hate to eat and run, but I've got a property to look at down by Union Station."

"Union Station?" He blinked at the sudden change of subject.

"Yes. I've had it in the back of my head to buy into that area. There's been a lot of renewed talk about building a convention center down there, so I thought, why not? I'm stopping there on the way home to look it over."

Dennis rolled his eyes. "Oh, good. I don't have enough work as it is."

"Don't worry. I won't be developing it right away. Maybe nothing will come of the convention center talk; but, just in case, I want to wait with a property in my purse." She chuckled. "In a way, it's sort of a spin-off of this Brady Quinn business. The building I'm going to look at was once owned by Randall Carson, the fellow who bought Quinn's Emerson Street house. I was going through some old real estate records. Handwritten on index cards, if you can imagine. I guess when they microfiched their records back in the 1980s they didn't think these were worth doing. Anyway, I was looking for Quinn's name, but you know how that goes. Carson's name simply caught my eye."

The building sat near the Union Pacific tracks. It was under the viaduct, on a small side street off of Fifteenth Street. Sarah parked by the Post Office Annex and walked from there. The street under the viaduct was dark, even though the sun hadn't set yet. Sunlight found its way between the old warehouses and created a spiderweb of shadows out of the abutments and steel girders. It reminded Sarah of the streets under the El in Chicago. The Fifteenth Street traffic ran across the viaduct overhead, and Sarah could hear the hum of the tires above her. The street below was deserted.

Her heels clicked on the pavement. The roadbed overhead echoed the sound back to her half a beat behind. Click(ick); Click(ick). Then a strange double echo: Click(ick)(tap). She stopped and turned. It was an automatic reaction and it was a moment before she realized she had done so.

There's someone there, she thought, peering into the shadows. A bum. A wino. The railyard was nearby. This was a good place to hop a freight.

She turned and resumed walking. The images of a thousand late night movies flashed through her mind. The lone woman walking the deserted street at

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

night. Don't go. Everyone knows the alien/monster/mad slasher is waiting, but the stupid woman goes anyway. The audience is always so much wiser.

The next time she heard the double echo it took an act of will not to bolt and run.

The trend nowadays was to preserve the building's shell, regardless what was done with the interior. Sarah stood outside on the street and looked over the building's exterior. Red brick. Solid construction. There were three rows of windows, the upper two dark. Widener's Restoration Handicrafts, she recalled, occupied only the first floor of the old building. The other two were unused. She nodded in satisfaction. This one might do.

She entered the building and looked for the second shift foreman. Widener's was one of several small employers of the handicapped. The company collected used or secondhand items and refurbished them for resale to the poor. She watched for a few moments while the men and women painted, soldered, sewed, and wired. It wasn't like an assembly line: no two items were alike. It took skill to diagnose and repair the faults of each one.

She found the foreman in his office. Binders and catalogs sat on shelves and atop file cabinets, strewn every which way. Papers littered the desk. Dirt and trash had accumulated in the corners of the room. Paul Abbot, the foreman, sat amidst this splendor, leaning back in an old wooden desk chair, his feet propped up on the desk, reading a magazine. Sarah wrinkled her nose.

"Mr. Abbot? I'm Sarah Beaumont. We spoke on the phone earlier. I'd like to see the building."

Abbot looked at her, waited a beat, then put both his feet on the floor. He laid the magazine face up on the desk, so Sarah could see that it contained pictures of naked women. The foreman looked from the magazine to her. He smiled, but said nothing, letting his gaze wander over her appraisingly. He grunted his approval and shifted the toothpick in his mouth from the left side to the right. He stuck his hands behind his neck and linked his fingers together. "Yeah?"

"Yes," she answered. "I'm thinking of buying this building. . . ."

"What, ya gonna throw me an' my feebs out on the street?"

Almost, Sarah was amazed that this creature possessed the gift of speech. "Nothing like that I assure you. I simply wish to inspect the premises."

"Inspect the premises," he mimicked. "Jeez, lady. Why'n'cha just rub my nose in it? Ya wanna look the joint over, be my guest; but ya don't hafta go put on airs." He reached out a foot and hooked a drawer handle. He jerked it open. "There's a flashlight in there. You'll need it upstairs. We don't use them floors, so there's no lights up there."

Obviously, he wasn't going to hand her the light, so she reached over and fished it out herself. It was a large "industrial size" flashlight. "Thanks," she said sarcastically.

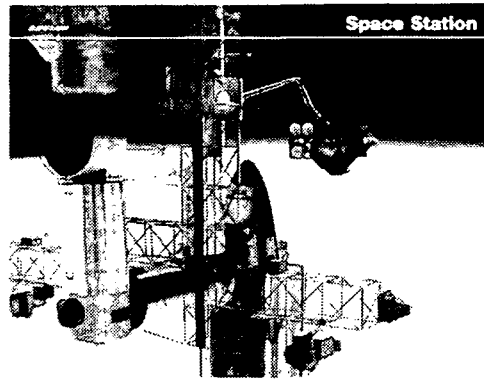
"No, thank *you*," he replied, grinning.

She realized that, in reaching down into the desk drawer, she had given him a perfect view down the front of her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

DO YOU KNOW YOUR FUTURE?

The National Space Society can help you learn about it.



Are you a person of vision? Are you anxious to make your views known? Did you know that there is a non-profit public interest organization, founded by the famed space pioneer Dr. Wernher von Braun, dedicated to communicating the importance of *all aspects* of a strong U.S. space program?

That organization is the National Space Society, and if you're a member, you'll receive:

- SPACE WORLD magazine. 12 big issues a year; tops in the field, following developments in manned and unmanned projects, national and international ventures, both current and projecting into the 21st century.
- VIP TOURS to Kennedy Space Center to witness Space Shuttle launches—thrill of a lifetime!
- REGIONAL MEETINGS/WORKSHOPS—meet an astronaut!
- DISCOUNTS on space merchandise—valuable books and memorabilia.
- Exclusive Space Hotline and Dial-A-Shuttle® services.
- and *much, much* more!

If you are that person of vision, excited about the adventure of space exploration, join the National Space Society today and help shape America's future . . . *your* future! To receive information on how to join, just fill in your name and address below. AND, just for asking, you'll receive our specially-produced leaflet, "Milestone Firsts of the Space Age," FREE!

NAME _____

ADDRESS _____

_____ ZIP _____

". . . promoting development of the final frontier"

National Space Society

600 Maryland Ave., SW #203W
Washington, D.C. 20024
(202) 484-1111

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

blouse. Her face burned and she took a deep breath to calm herself. What was it her grandmother had always said? Some people were no better than they should be.

"Which way are the stairs?" she asked.

He roused himself from his chair. "C'mon, I'll take you." Stepping past her, he held the door open for her. Surprised at this act of chivalry she stepped through, but as she did so, he brushed up against her rear.

She spun and struck out with the flashlight. It caught him just above the elbow. He howled. "Hey! Watchit, lady, willya!"

"No, sucker. *You* watch it. You try that shit on me again and you're dead meat. You got that?"

"Look. I made a pass, sure. I ask do you wanna do it. You know how it is. Sometimes they say yes. What the hell." He rubbed his elbow.

When they reached the stairway to the second floor, she recalled what Abbot had said about the lighting. The last thing she wanted was to wander around upstairs in the dark with this lecher. She stopped and wagged the flashlight at him. "I think I'd rather look around myself."

He shrugged. "Suit yourself."

She climbed the stairs. The air was hot and stale. The runners creaked beneath her feet. At the top, she flicked her light on. The beam was dim but wide. She played it in a circle around the room and saw old manufacturing machinery, sitting in dust-shrouded ranks. The tang of old metal filled the air.

She approached the nearest machine and looked more closely. A metal stamping press, she decided. The drivebelt on the flywheel was long rotted; the metal, pitted with rust. A patina covered the brass fittings. She rubbed the brass nameplate with her thumb. Bliss Company, it read, followed by a parade of patent numbers and dates.

She toured the room, checking the flooring and rafters. In one corner, in what had once been a gaging laboratory, she found a musty old bed. It was nothing but a shapeless mattress thrown on the floor. Nearby was a stack of girlie magazines.

She returned to the stairwell and climbed to the top floor. The room was much like the one below, except that the machines were smaller and more varied and, if that were possible, in even worse shape. The smell of rust and of ancient machine oil was heavy. The flashlight cast a circle of light, throwing the nearest machine into sharp relief, a patchwork of lights and shadows, projections and cavities, like some crazed lunar landscape. Beyond it, other machines crouched in the dark. She wondered why the equipment had been abandoned. It was surely worth money, even today.

On the far side of the room were the lavatories. She stepped in and looked around. Ancient and corroded fixtures greeted her, lined up like the statues on Easter Island. She had turned and was leaving when a shadow in the corner caught her eye. Something odd about it.

She walked closer and saw that there was a blind, dog-leg turn with a broken doorway. A shower stall? A closet? There were three boards nailed across

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it. An old sign with faded lettering was stapled to the boards. Stairway condemned.

A stairway? In the lavatory? A back stairwell, maybe. She aimed her flashlight through the door. Sure enough, there was a flight of stairs. But they led *up*, not down. Funny. From the outside, she had seen only three rows of windows; and the main staircase had ended on this floor.

Well, she thought, nothing ventured . . . The stairs looked to be in no worse shape than the others she had already climbed. There were no footprints in the thick carpet of dust that covered them. *To boldly go where no man has gone before* . . . She pulled the boards away and stepped through the broken doorway.

She was wrong about the steps. They were in worse shape. The sixth one gave way when she put her weight on it. Her right foot plunged through the rotted board and the splintered edges scraped her ankle and calf. Pain shot up her leg.

She grabbed the bannister to keep from falling, but it came loose from the wall. The flashlight dropped from her hand and rolled down two steps, leaving her in semi-darkness.

"Damn!" She tried to pull her leg up, but it was caught. Like in one of those "Chinese handcuffs" she had played with as a child.

She listened. The silence was almost absolute. She could barely make out the muted rumble of the viaduct outside. Somewhere nearby water dripped slowly into a pool. It was a lonely, solitary sound. A steady, measured cadence. Plunk. Plunk. She felt as if she were deep inside some cave.

Bending over, she probed the hole with her fingers. Splinters pointed straight downward like miniature spears. If she were to pull her leg straight up, they would impale her ankle. She reached in and broke off the pieces, slowly enlargening the hole. After a few minutes of patient work, it was big enough to pull her foot out.

It hadn't occurred to her to call for help. That was an admission of defeat, that she couldn't do the job herself. She had never needed help. Besides, Abbot was two floors down and unlikely to hear. And even if he did come, he would have used the opportunity to grope her while freeing her leg.

She turned and sat down on the step, rubbing her ankle. It was scraped raw. She supposed her nylons were ruined. She stood tentatively and tested her ankle. It hurt, but she could stand on it. She gritted her teeth and retrieved the flashlight. It was flickering. She smacked it sharply with the flat of her hand and the light brightened.

She aimed the light down the stairs, then up the stairs. Then she grimly resumed climbing, testing each step carefully before putting her weight on it.

Lacking windows, the fourth floor was pitch black. She played the light around the room, picking out nondescript wooden furniture. A row of oak filing cabinets lined one wall; five ancient roll-top desks, another. In the center of the room were heavy oaken tables with ungainly-looking machines atop them. Everything was covered with a thick layer of dust. There were rodent tracks in the dust, but no footprints.

An eerie feeling stole over her. She was the first human being to enter this

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

room in who knew how many years. From the looks of things, this floor had been abandoned long before the others. What sort of ghosts haunted manufacturing plants?

She walked to the center tables and inspected the machines there more closely. They were full of cams and cogs, ratchet wheels and rods. Notched bars jutted out at odd angles. Each machine had a keyboard with lever keys, like old-style manual typewriters. There were ten rows and ten columns of keys in the center of the board. She rubbed away the dust and saw that each column was numbered from 0 to 9. She reached out curiously to depress a key, but it was frozen in place.

They were obviously primitive calculating machines. As a computer buff, she had always been fascinated by such machines. She remembered the exhibit of early key-set and key-driven mechanisms she had seen so long ago in Chicago. Dorr's *Comptometer* had come out in 1885; the Burroughs in 1911. The styling and ornamentation of these machines seemed even older. The cams looked as if they had been fashioned individually, by hand. She looked for a nameplate, but she couldn't find one. *Maybe I can check the patent office.*

She brushed off the other keys and recognized the standard arithmetic symbols. There were also keys marked with the < and > signs. Other symbols were totally strange to her. What did ¬ mean? Or ∉? Or ⊗ and ⊕?

She gave it up and turned her attention to the filing cabinets. Most of the drawers she pulled out were empty. A few contained loose pages filled with mathematical computations. Her light picked out the title on one. *On the Eventual Bifurcation of Highly-connected Dynamic Sets.* Great stuff.

One drawer was locked. She yanked on it hard and heard the metal pins give way. Another yank and they bent. The drawer slid out with a protest of shot bearings and warped and swollen wood. There were two thick file folders inside. She tried to read the tabs in the dim light. The ink was old, faded.

Index. She pulled the smaller folder out of the drawer and took it to the table. Holding the flashlight in her left hand, she opened it and tried to read some of the titles in the dim light. *An Optimal Policy for Commodity Purchases Using Integral Simplices. A Branch-and-Bound Approach to the Job Shop Problem. On the n-Space Graph Structure of Iroquois Matrilinearity. Applications of Green's Function to Queues in semi-Closed Networks. The Dynamical Equations of Ideon Contagion.*

What was this all about? Mathematical research? No, not entirely. Some of the titles, she saw, dealt with anthropology or economics. Applied mathematics, then. A peculiar mix; and what an odd place for it! The dates written next to the titles of the papers ran through 1892. The earliest was 1833: A real wowser entitled *Some Stochastic Processes with Absorbing Barriers* by someone named Jedediah Crawford. Her light wandered up and down the filing cabinets. Sixty years of mathematical papers? A college hidden on the fourth floor of a manufacturing plant?

She pulled out the other folder from the drawer and peered at it in the dim light. *Maintenance and Repair of Babbage Analytical Engines.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

That stopped her. Charles Babbage had been Lucasian Professor of Mathematics at Cambridge University from 1828 to 1839. Any real computer buff knew about him. He had once described a new kind of calculating machine, far advanced over the simple add/subtract models then available. His Analytical Engine was supposed to be able to carry out an entire sequence of operations without the need for a human being to key each one in. It was also to have the capability of running either of two alternative sequences, depending on the results of previous calculations.

The storage was to be purely mechanical, using wheels and punched cards, but Babbage had in effect described the digital computer. The actual construction of such "engines" had been beyond the state of mid-nineteenth century engineering art. None had ever been built.

A ball of ice formed in the pit of her stomach. She turned and stared at the darkness where the machines sat. None had ever been built.

Humming the old *Twilight Zone* theme song, she carried the folder to the table and skimmed through it. There were page after page of mechanical drawings, with detailed specifications and callouts. A Rube Goldberg nightmare. More pages, of handwritten instructions in ornate Spencerian script.

It was too much to look at here in the darkness. She decided to take it home with her. Just as she was closing it, a note caught her eye. It was written sideways in the margin of one of the drawings.

"*Discussed possible electrification with Thomas while in Menlo Park. Not presently feasible. B. Quinn. 21 July 1881.*"

She arched her eyebrows in surprise. B. Quinn. Brady Quinn? Had Carson been more than the buyer of Quinn's house? Had he and Quinn been business associates?

Hmmm. And associates of Edison, as well. At least, she knew of no other Thomas in Menlo Park in 1881 with whom one would discuss "electrification."

Now we're onto something, she thought. Brady Quinn Place may actually mean something. Quinn was a local figure. He knew Edison on a first-name basis. And he was apparently involved somehow with the world's first computers.

This could be *big!* The dust here was thick. No one had been here in years. In decades. *No one else knows about these machines*, she thought. When I buy the building, the machines will be mine, too.

Her flashlight dimmed and she smacked it again. This time it did not brighten. She didn't like the idea of finding her way back down in the dark. She closed the folder and tucked it and the "Index" folder under her arm. *I'll come back later, with better light.* At the door, she paused for one last look.

She played the light over the black, shadowy contraptions. The world's first computers. Yet, here they sat, long abandoned and forgotten. Odd. With an invention like that, they should have made history.

When she returned the flashlight, Abbot noticed the folders under her arm. He smirked. "Lootin', hunh? Why'n'cha

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

take some of the copper and brass off'n the stampin' presses? They sell for a good piece of cash down t'the scrap yard."

Sarah reminded herself that Abbot had never been up the hidden stairwell. She hoped he would not wonder where she had found file cabinets. Best if he worried about something else. "Does Widener know you're stealing his property and selling it?"

"Widener? Hell, he ain't never set foot in the place. Me and Babs, that's the daytime forelady, we got a good thing goin'. None of the feebs can climb stairs, so they don't even know what a bonanza is up there. An' you ain't gonna tell, lady, 'cause then I'll say how you walked off with some stuff yourself." He leaned back in his chair and folded his arms smugly.

She smiled tolerantly. "I'm afraid you've got me."

"Damned right." He nodded vigorously. "You ain't no better'n Babs and me. I . . ." His eyes dropped to her ankle. "Hey! You hurt yourself up there? You okay?"

"Well . . ."

"Cause I tolja it was dangerous up there. I offered to come wit' ya but you insisted to go alone. You ain't gonna sue or nothin, are you?" The toothpick in his mouth danced nervously from side to side.

For one brief moment she had thought his concern had been for her. In a way, it was nice to know his self-absorption was universal. A burst of altruism would have been a flaw in his otherwise seamless character.

"No," she told him. "I ain't gonna sue or nothin'." The last thing she wanted was a troop of lawyers and claims investigators wandering around upstairs.

The sun had set by the time she left the building. The streetlights created little oases of light at the corner with Wynkoop. Otherwise, it was pitch dark, not unlike the room on the fourth floor. Suddenly, she wished she had parked closer.

She walked briskly toward the corner and the Post Office Annex. Once again she thought she could hear ghost-footsteps behind her.

It's only a trick of acoustics, she told herself. No one's following me. Years of rational training insisted on that; but millenia of instinct won. The bogey men have always lived in the dark. She quickened her footsteps.

Just as she turned the corner, one of the big loading dock doors on the Postal Annex rolled up with a metallic clangor that made her jump.

A gang of mailhandlers began moving large postal bags onto the dock. They were laughing and talking. The footsteps behind her stopped (if there really had been footsteps, she scolded herself).

She looked at the men and recognized their supervisor. She had met him at a party, back during her newspapering days. He was the brother of one of the other reporters. He had taken her for a ride on his Suzuki.

"Hey, Pat!" she called, remembering. "Still riding that bike of yours?"

Pat turned, surprised. "Who. . . ? Oh." He snapped his fingers. "Wait, don't tell me. Sue . . . No. Sarah, right? Yeah, Kevin told me you quit the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

paper. Went into real estate or something. Wheeling and dealing, he said."

"That's right. I was inspecting a property around the corner." She looked back into the darkness of Fifteenth Street. "I may be wrong, but I think someone was following me. Could you hang around and watch until I get into my car? I'm parked right over there."

"Sure. No problem."

It was irrational, she knew; but she felt relieved. Someone who knew her knew she had been there. The other men were waiting, not really interested; but they would remember, too.

The first thing she did when she got in the cars was to lock the doors. Then she took a deep breath. *What if he's already in the car?* She jerked around and looked in the back seat.

It was empty. Sarah let out her breath. She felt monumentally foolish. She relaxed in the seat and laid her head on the backrest, eyes closed. *I'm spooked,* she thought. The desolate air on the top floor of the Widener Building. The emptiness of the street under the viaduct. Too many late night movies. There probably hadn't been anyone following her at all.

She sat up, started the car, and put it in gear. Unbidden, the thought arose. *I wonder if it was the man from the library.*

Ordinarily, she drank little, and then usually with meals; but when she reached home she poured herself a full eight ounce glass of white wine. She drank half of it, then set the tumbler on the countertop. She checked the clock on the kitchen wall. Ten o'clock.

Fee jumped onto the counter and sniffed at the wine. He sneered in disdain. A bad year, thought Sarah and laughed. That was a mistake. His dignity offended, Fee dropped to the floor and disappeared.

If I'm going to get any sleep tonight, I need to relax. Forget about phantom footsteps or the man in the library. She decided to write a tapeworm that would search out connections between Brady Quinn, Randall Carson, Charles Babbage, and Thomas Edison.

She sat in front of the terminal and flexed her fingers, like a pianist about to play. Friends in college had sometimes asked her why, with her obvious skills, she hadn't become a programmer. Her response had been that computers were a useful tool, but that she didn't want to be a toolmaker. That had shocked some of the "propeller heads." They had never thought of themselves in so prosaic a fashion.

As she coded, she felt guilty. *I really should be costing the renovations on the Emerson Street house*, she thought, *not meandering through the DataNet*. There was a kilotonne of work to do. She had to PERT out the schedules. Get things moving. The Quinn business had waited a hundred years. It could wait a while longer.

She promised herself she would spend time with REALTOR, her expert program, setting up her buy out of the rest of the block while the worm researched Quinn and his connections with Edison and Babbage. Give the worm a couple of days to see what was on the Net, then check if she needed to realtime anything herself.

She thought about the dust-shrouded

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

machines she had found. Babbage engines. The thought excited her. Here was a chance to be remembered for something significant. To be more than Sarah Beaumont, upwardly mobile developer and ex-reporter.

For the next few days Sarah sweated over her project, putting in bids on a half dozen properties in the area, spacing them so that no one else could develop there without her cooperation. Location was everything in the real estate game. She routed the deals through a complex arrangement of dummies and fronts. There was no way to conceal the volume of activity; but she didn't want anyone to know that she was behind it all.

She priced the renovations through a number of contractors she knew, keeping the discussions tentative and basing her estimates on the house she and Dennis had inspected. She made a note to meet with Dennis and firm up the details. She was looking for the lowest costs and was wise enough to know that that did not mean the lowest *price*.

She also put in a bid on the Widener Building. It hadn't been up for sale, but any realtor knew that every property had its price, if you made the right offer.

Just before noon on Friday she decided to take a break. She closed her real estate files and put a ragtime disc on the CD player. She went to the kitchen and made herself some coffee and, when she returned to the terminal, called up her worm. Time to see what it had learned about Quinn and the Babbage engines. She had told Dennis about the strange, primitive computers and he had been pleased with himself. His intuition had been vindicated. *Brady Quinn Place*, named after a man involved with the world's forgotten first computer, made perfect sense for a project that treated information as a utility and hook-ups with the DataNet as necessary as hook-ups with power and water.

The disc began playing *Creole Belles* while she scrolled through her findings. She hummed along with it. "My Creole belle, I know her well . . ."

Naturally, there was a mass of information on both Edison and Babbage. They were famous historical figures. But there was nothing that connected them with Quinn or Carson or the machines on the hidden fourth floor. She did learn that Thomas Edison had met regularly with Henry Ford, Harvey Firestone, and John Burroughs to "discuss the direction of the country." They went on nature hikes in Ford's private preserve in Michigan. Well, businessmen are always grouching how the country is going to hell in a handbasket. Burroughs, she found when she had looked him up, was a naturalist. One of the first ecologists.

"That explains the nature hikes, then," she said aloud. She laughed at the thought of three tycoons of industry slogging through the fields looking at mushrooms and butterflies. The idea that Henry Ford "stopped to smell the roses" bordered on the ludicrous.

As for Babbage, it was amusing, but hardly germane, to learn that he had hated organ grinders and had led several campaigns to ban them from the streets. It was more interesting that he actually started work on a "difference engine" to calculate the squares of successive

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

integers. But, after spending £23,000, including £6,000 of his own money, the project had been abandoned incomplete.

He had been co-founder of the Analytical Society and had popularized the concept of life insurance, a business based on the notion that unpredictable events can form predictable patterns. In 1832 he had written *On the Economy of Machinery and Manufactures*, anticipating much of what was now called operations research and systems analysis.

There was also a curious note in the 1833 *Proceedings of the New York Academy of Sciences*, placed by a man named Jedediah Crawford, announcing a meeting to discuss the import of Babbage's theories, with a view to forming a Babbage Society to propogate them.

She remembered that Crawford had been the author of the earliest paper listed in the Index she had found in the locked drawer. Had he actually formed his Society? That such a society might actually try to build Babbage engines seemed logical. Her worm had found no further references to a Babbage Society in the Net; but the Net was young and many databases were not yet in it. She should check it out.

Well, she did have some business to conduct at the City and County Building and, while she could do it by phone and modem, driving down there would give her an excuse to drop in at the newspaper and at the library. The CD was playing Botsford's 1908 *Black and White Rag*. She fought the temptation, not too doggedly, then gave in. There was still work waiting to be done on her project, but digging after Quinn and the Babbage Society was just too much fun. She picked up the phone and made an appointment to see the County Assessor that afternoon.

She didn't expect to find anything about the Babbage Society in the *News* morgue and she wasn't disappointed. The paper, after all, had not started publication until 1859. Morgan promised he would ask around for her. He had a friend on the *New York Times*. The *Times* was not much older than the *News* but, being in the East, would more likely have picked up stories about Crawford's society.

Later, when she had finished her business with the Assessor's office, she decided to cut across Civic Center Park to the library. She left the City and County Building and jaywalked across Bannock to the Park. She walked slowly through the afternoon crowds, deep in thought. There were young people lounging about the Park. Some were loafing on the steps of the Greek Theatre. Frisbees leaped from the crowd like locusts from a meadow.

I'll need help, she thought. She remembered the titles in the Index. Gibberish. Although she recognized most of them as dealing with operations research problems, another tie to Babbage. And the drawings in the Babbage Engine Manual. *A mechanical engineer, at least. And a mathematician. Maybe an historian, as well.* She hated the idea of sharing her discovery. The experts would take over and she would be politely ushered aside. *Thank you, Ms. Beaumont, but we'll take it from here.*

She had gone it alone her whole life, asking help from no one, making it on

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

her own. Sure, the publicity over the machines would help sales at Brady Quinn Place whether she were personally involved in the investigations or not, but dammit, that wasn't the point! She *wanted* to be part of it! She wanted to be known as the discoverer.

She was passing the Greek Theatre when her right heel caught on something. Her ankle was still sore from the accident on the stairs and she stumbled. Something whined and hit the stone column next to her and rock fragments stung her cheek.

"Hey! What the hell do you think you're doing?"

She turned at the sound of the voice. A big, burly man wearing an unbuttoned sport shirt was stalking across the park, hollering. Beyond him, she could see a park policeman reaching for his holster. Some of the kids were turning to look.

What was going on? She turned her head. There was a man on the other side of the reflecting pool holding a pistol. Two handed stance. Feet spread wide. The gun was pointed at her. *The gun was pointed at her!*

She didn't stop to think. Reflexes took over. She ducked between two pillars of the Greek Theatre and dropped flat to the ground on the other side. *This isn't happening!* There was another spat and whine as a bullet ricocheted off the stone. People were screaming. She crawled to the end of the temple-like colonnade. Her heart was pounding. Dared she peek? He might be waiting for her to poke her head out. But he might already be running toward her position! She had to know.

She saw the man with the gun turn and fire at the big man who was bearing down on him. The bullet took the big man through the open mouth and the back of his head exploded in a shower of flesh, blood and bone. The impact flipped the man over backward and he lay sprawled, eyes staring at the sky overhead.

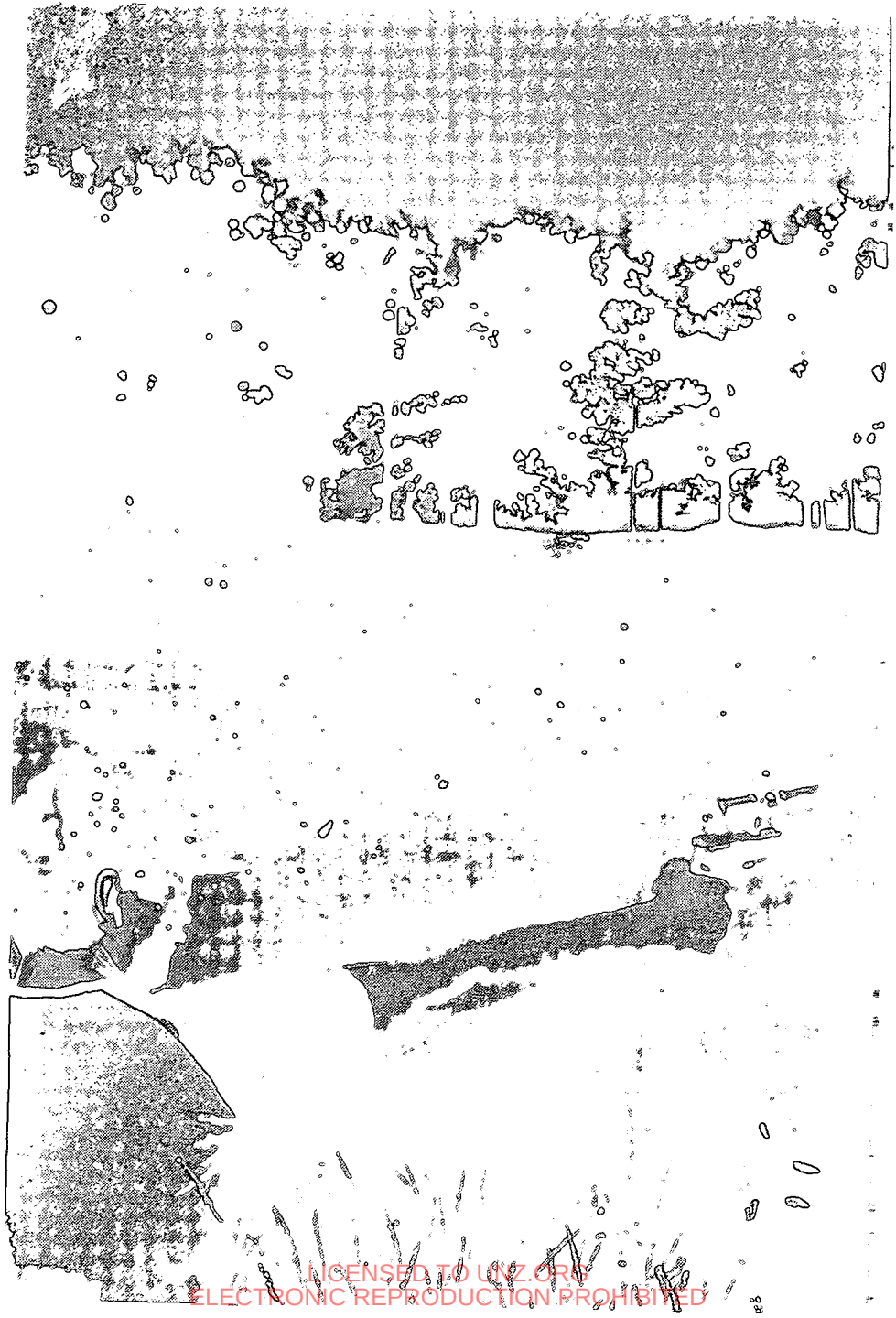
The gunman turned and looked at Sarah. People were running in all directions. He brought his gun up. The park policeman shouted an order. He had his own gun out, already pointed at the gunman. The gunman turned, lightning quick, and fired. The policeman staggered back, squeezing off two fast shots as he did so. The gunman spun and crumpled and the policeman dropped to his knees, holding his stomach. There were sirens in the distance, growing louder.

Holding to the stone pillar for support, Sarah stood and surveyed the park. There was a confusion of people. Some were still running; others had stopped. A woman was holding the body of the first man, wailing and pressing him to her. He was dead for sure. He had probably saved her life by distracting the gunman, she thought. What had possessed him to charge an armed man like that? He probably had not been aware of the gun at all. It had been silenced.

She looked in the gunman's direction. He lay still. A young man walked up to him and stared at the body. A blue and white bird flapped down from the sky, cocked its head left, then right; then pecked at the face of the dead man.

Sarah felt the sourness rise in her throat. She turned her head aside and retched. It was a great, heaving, stomach-twisting convulsion. When she had

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

finished, she fished in her briefcase for a handkerchief and wiped her mouth. There was blood on the handkerchief from her cheek, where the stone fragments had struck.

She felt numb. Without sensation. The tableau on the park seemed distant, as if seen through a telescope the wrong way. The sounds were muted. She turned her back on it and began walking down 14th Street. In a walled-off corner of her mind she knew she should stay and wait for the police. *You're in shock*, the voice said. *You're not yourself.*

She'd crossed Cherokee and was walking behind the Mint when a car pulled up and braked sharply next to her. The tires squealed. Sarah spun, her whole body tensed, and her heart skipped a beat.

Morgan rolled down his window. "Quick," he said. "Jump in."

She stared at him, then walked around his car and slid into the passenger seat. Morgan drove an old Chevy of indeterminate year and color. She slammed the door closed and hunched over in the seat, hugging herself.

Morgan shook her shoulder. "Take your jacket off. And the big red bow."

"What . . . ?"

"Just do it." He put the car into gear without waiting to see if she was complying. Dumbly, she shrugged out of her suit and loosened the bow. She looked at it. It was bright red, the color of arterial blood. She began shaking.

Morgan shoved a clipboard at her. "Put the sunglasses on and stick the pencil behind your ear. Try not to look like a well-dressed black businesswoman."

She looked at him. "Why . . . ?"

"Because that's what came over the police radio. Some maniac was taking potshots at people in the park, and the description of one of the targets sounded a lot like someone who had just been in to see me."

Fourteenth Street was one-way eastbound. Sarah saw that they were headed back toward the Civic Center. She felt her stomach tighten and she began to shake her head.

"I figured you'd be in no kind of shape, so I came looking."

"Uh, thanks."

"Sure thing."

The police had erected a barricade and were waving all the traffic onto Bannock. Morgan grunted and turned. He rolled down the window and called to one of the officers. "Hey, what's going on here?" Sarah turned her face away. She could feel the bleeding starting again on her cheek.

"There's been a shooting in the park, sir," the officer answered.

"Anyone hurt?"

"I couldn't say."

"The *News* have anyone there?"

"Yes, sir. A reporter and photographer just arrived."

"Okay. Thanks." Morgan rolled the window up and continued down Bannock.

"You didn't tell him who I was."

"He didn't ask."

"They're looking for me."

"Then they'll find you; but tomorrow is soon enough for that."

"Morgan, why did you come looking for me?"

He turned his head and smiled at her. "To get the scoop, of course. A first-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hand eyewitness account of the biggest story this year."

"A scoop. Is that all?"

This time he wouldn't look at her. "Sure. That's all."

"Morgan, what would you have done if the policeman had said that no one from the *News* was there?"

"Why, I'd've stuck a press card in my hat and you and me'd go cover the story together. Just like old times."

"Morgan, if we'd have gone in there, someone would have recognized me!"

He looked at her, his mouth agape. "Really? I thought all you people looked alike!"

She couldn't help herself. It was like their first reporting days together, when they used to kid each other unmercifully. The *Black and White Rag*. She started to laugh, but the laughter turned to tears.

Morgan Grime's apartment was on Capitol Hill in a rambling old apartment building that had gone condo back in the '70s. He took her through a side entrance, three flights up and down the hall. It was like the inside of a maze. He let them inside his apartment and locked the door behind them.

Sarah walked to the sofa and sat down. She stared at the wall. There were prints hanging there: long, thin Japanese paintings with their strange vertical perspective. Chrysanthemums and pagodas. Mountains loomed out of misty cloud banks. Faerie waterfalls plunged over steep cliffs. Her tears blurred the pictures, making the waterfalls more real.

Suddenly, there was a glass in front of her. Morgan was pressing a drink on her. She took it and drank it without tasting anything. She shoved the empty glass back into his hands.

"Another one?" he asked.

"Yes. Please."

"Want to talk about it?" He wandered over to his bar and poured something amber straight out of a bottle, adding nothing.

"Yes. No. Not yet. I'm still shaky. Morgan, that man was trying to kill me."

"A maniac. He shot three or four people. I heard on the police radio. One dead. One serious. Two slightly wounded. You were just there at the wrong time. You're okay now."

"No, dammit! He was shooting at *me!* The others, they were just bystanders."

"I know it probably seemed that way, but . . ."

"Morgan, I *know*. He looked straight at me." She thought back, remembering. The scene had played itself out in slow motion. Every word, every gesture was etched in her memory. "He looked straight at me. God help me, he smiled."

"Like I said. A maniac."

"Maniacs don't use silencers. They don't strike stances like they were on a target range." Morgan handed her her refill and she gulped it down. She remembered how the first bullet had struck the stone column next to her. Inches away. If she hadn't stumbled, she'd be dead now. Her skull blown apart. One moment: the smell of the grass and the trees, the cries of children playing, the shining gold of the capitol dome at the far end of the Civic Center; the next moment, nothing. No more Sarah Beaumont. She began to shiver.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Here," said Morgan. She turned. He was holding out a long flannel bathrobe, blue and white plaid. "You threw up. It's on your clothing. Go in my bedroom and get out of those clothes. I'll take them downstairs to the laundry room. Then I'll take care of that cheek. There's iodine in the medicine cabinet."

She did as he said. After she had handed him her soiled clothing she sat on the edge of the bed, her arms wrapped tightly around herself, and waited. An immeasurable time went by. When he returned from the laundry, she stood up and went to him. "Hold me, Morgan," she said.

He looked at her in his robe and frowned. "Uh, Sarah, I don't think . . ."

"A bathrobe doesn't hide much, does it?" She let the robe fall open.

He flushed. His ears burned a bright red and he turned his face away. "I never thought I'd hear myself say this, but . . ." He bit his lip, reached out, and pulled the folds of the robe together. "Look, Sarah, you were this close to being dead. Now you want to prove you're alive. This isn't you talking. Another day, if you're still willing, God knows I'll be; but not now, not tonight. I've got my standards, low as they might be."

"Morgan." She put her arms around him. "I'm shaking so bad I need to hold onto something solid. Just that. Nothing more."

Awkwardly, he put his arms around her. She felt herself relax at last. She felt drowsy. The drinks were catching up with her. She willed sleep to come and with it, forgetfulness.

* * *

In the morning she awoke in a strange bed. There was a moment of disorientation and her eyes searched the walls, finding nothing familiar. She sat up and noticed she was wearing a strange bathrobe but was otherwise naked. She saw her clothing carefully hung on the back of the bedroom door. *Where . . ?*

She remembered. The Civic Center. The shootings. But, already yesterday's events seemed remote. Something seen on the TV news. Film at ten. A self-defence mechanism, she decided. The mind had to distance itself from the horror or go mad.

She rose and dressed. She remembered Morgan holding her. She had kissed him and, after a moment, he had kissed her back. *Poor Morgan,* she thought. It must have been agony for him. Morgan had always been a hand with the ladies, and she had felt the desire in him.

She found him asleep on the recliner in the living room. He was twisted into an uncomfortable-looking position. His clothing was wrinkled. She shook her head. He liked to come on like a tough, cynical reporter, but sometimes the real Morgan Grimes showed through. She wondered why the two of them had never made it as a reporter team.

In the kitchen, she hunted up some eggs, chilis, and other things and set about making *huevos rancheros.* She was shredding the Monterey jack when he walked in. He looked at what she was doing, grunted, and walked out again. After a minute, she heard the shower start.

Later, Sarah stood by the window and gazed out at the city. Behind the build-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ings, miles away but still dwarfing them, she could see the Rockies dimly through the haze. There were places there, not too far away, where a woman could be alone, with no other humans within miles. With a shiver of *frisson*, she remembered staring out the window of the house on Emerson Street just last week. It had even been about the same time of day and not too far from where she stood now. The scene lay unchanged, yet there was a wall between the two events. That had been another Sarah, another life. She wondered if everyone who faced death felt the same way: Reborn through some terrible baptism of blood. Perhaps that was why the Japanese had made a sacrament of suicide.

"So, you believe the gunman was after you specifically."

She turned and faced Morgan. The newsman was sitting in his recliner, a steno pad balanced on his knee. "Yes, I'm certain. Do they know who it was yet?"

"No. I called the paper this morning. He had no ID on him. Nothing. They're going through mug shots and showing his face on the tube. Someone will recognize him and call in." He looked at her with narrowed eyes. "*You* don't know who he was, do you?"

"No, of course not."

"Then, if he wasn't a madman, why was he trying to kill you?"

"I don't know!"

"Don't you think you deserve to?"

She laughed. It was her first real laugh since the shooting. "Sure, but he's in no shape to tell me now."

"There are only eight reasons for

Songs of Space...

Songs where the only limits are the limits of the imagination. Songs of space travel from Sputnik to Challenger — and from Dorsai to Downbelow Station. Moon miners and drunken aliens. Space marines and solar sailors. Stardrive lovers—and the trouble with zero-G sex. And more: Songs of warriors and wizards, dragons and demons, elves and wolves and even a unicorn or two.

Like to try a taste? We'll make it easy: for just $3 we'll send you a sampler tape—a full hour of serious songs, silly songs, and some of the best science fiction and fantasy music there is.

Give the future a listen. We think you'll like what you hear.

Off Centaur Publications
P.O. Box 453, El Cerrito, CA 94530

Yes, I'd like to give the future a listen. Here's $3; send me a sampler cassette tape of science fiction and fantasy music from Off Centaur.

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Please allow 3-4 weeks for delivery.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

murder. We can go through the list, if you like."

"Only eight? I would have thought there'd be as many reasons as there are victims."

"No, only eight. It's the details, not the motives, that differ from killing to killing."

She shrugged. "So what are they?"

He held up his fingers and counted off with his pen. "There are the impersonal, the emotional, and the rational. As for the impersonal reasons, you've already ruled out homicidal mania. What about someone making a political statement?"

She hesitated. "A terrorist or assassin? But what sort of statement would he make by shooting *me?*"

"He also shot four other people and killed one. They think the policeman will live."

"No, that was . . . I don't know. Window dressing. He didn't shoot at anyone else until I was behind a stone wall."

"Which means . . ."

"He didn't want anyone to know that I was the only target."

"If you know, then he failed."

"A failure. Yes. He should have taken up another line of work."

Morgan looked at her oddly, then he shrugged. "All right. He was a professional hit man and it was important that no one probe too deeply into his reasons for singling you out. Who hired him?"

"If I knew that . . ."

". . . And why? What about rage or revenge? Two of the emotional reasons."

She shook her head. "No. Revenge for what? For bringing off a sharp business deal? Realtors don't hire hit men for things like that."

"Do evicted tenants?"

"Morgan, I've never hurt anyone that badly."

"A grudge doesn't have to be reasonable. It doesn't even have to be real. And all it takes is one person with a grudge. Okay, what about jealousy?"

"Who has time for romance? Abe and I split years ago . . ."

"Professional jealousy?"

"No, dammit! I get along fine with everyone."

"As far as you know, anyway. It's like revenge. Who knows what might excite someone else to jealousy? You're pretty well off. Some may resent a woman, and an attractive black one at that, being so successful. Or old friends might be jealous of your success."

Chicago's Old Town flashed through her mind. Hyde Park. Faces she had played with in childhood; faces she hadn't even thought of in too many years. Where were they now? Still in Old Town, probably. Friends left far behind, on another planet. Did they hate her that she had left and never come back? That she had never even *looked* back? "Christ, Morgan, you'll have me paranoid."

"Even paranoids have enemies."

Anger swept through her and she hurled it at him. "What is this, an interrogation?" She turned her back on him and stared out the window once more. But, this time she saw Chicago, not Denver. She leaned her arms against the window sill.

"I'm glad you trust me, at least."

She faced him again. "What do you mean?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"We were poor starving reporters together, remember? Now you're rich and I'm still poor and starving. For a while, anyway. I might be insanely jealous, for all you know; but you turned your back on me."

She smiled crookedly. "Thanks, Morgan. You're a pal. I won't do it again."

His face was serious. "I mean it. If you're right. If you're not just imagining things, *don't sit with your back to the room*. That's how they got Hickok."

"All right. I'm sorry I got mad. You're just a reporter doing your job."

He looked at her for a long moment, then his eyes dropped to his notepad. "Yeah." He tapped his notebook rhythmically with his pen. "Well, folks with an emotional reason for murder usually do it themselves; so let's concentrate on the rational reasons. To gain something you possess. You do not haf zee Maltese Falcon, do you?" He delivered the last line in a pinched Peter Lorre accent.

"He didn't try to rob me, Morgan; and . . . and I'm cutting him out of my will as of today." She started laughing. Morgan frowned and started to rise from his chair. She waved him back. "No, I'm alright. God! I can joke about it now. I just never realized there were so many goddamn reasons to kill."

Morgan smiled, without humor. "Only eight, remember? Number seven: To cover for another crime. You're not a witness to anything, are you? A detective or a reporter or a secret agent might be sniffing around the edges of something big and not realize it; but a real estate broker? Not likely."

The ROBOTE masters are bringing their wa to earth in paperba

DEL REY

#1 in Science Fiction and

Published by Ballantine B

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You've really made a science out of this, haven't you?"

"But what *have* you been sniffing around lately?"

She hesitated. She didn't want word of her Emerson Street project to leak out yet, least of all on the front page of the *News*. She had asked his help in finding out about the Babbage Society, but she hadn't told him why. "Nothing important," she told him. Then, swearing him to off-the-record secrecy, she told him about Emerson Street, Brady Quinn, and the Babbage engines. He listened and made notes.

"It doesn't sound too promising, but I'll look into it. Who else knows about it? You said Paul Abbot was the foreman you talked to? And Dennis French has the two papers you found in the wainscoting?" He jotted down the names. "I'll go see them both later today, if I have time."

"Abbot doesn't know about the Babbage engines, and I don't want him to know. He'd take them apart and sell them as scrap metal."

Morgan smiled at her. "I will be the soul of discretion. Maybe Abbot is afraid you'll turn him in for looting and hired a killer to silence you. Okay: Eighth and final reason: To protect themselves from you."

"Self-defence?! Morgan, are you nuts? I'm no threat to anyone. I don't even step on spiders."

"Maybe you should; some are poisonous. But self-defense is like any other motive. It's in the other person's mind. You might not even know it. You may have done something somewhere that someone somehow perceived as a threat."

"Oh, that really pins it down, Morgan! Let's go arrest the son-of-a-bitch!"

"Sarah, I'm trying to help."

"You're trying to get a story!"

"Yeah. Right."

"Besides, why not just warn me? Why shoot me down in broad daylight?"

"Maybe the warning itself would have been too revealing."

"You've been reading too many espionage thrillers." Then she remembered the man in the library and her feeling later that she was being followed. Had they been warnings? And if so, of what? She told Morgan about them.

He nodded. "This may be something. The man in the library," he said. "He wasn't the same one who shot at you."

"No."

"Then if there's a connection, that implies that an organization is trying to kill you."

"If there is . . . I don't know. I've never been shot at, let alone by the Mafia or the Arab Brotherhood."

"An organization." He sat back and tapped his teeth with his pen. "Tell me," he said casually, "what do you know about John Benton or Genevieve Weil?"

She shook her head. "Never heard of them."

"Daniel Kennison?"

"Just what I read in the papers. What has Kennison Demographics got to do with my being shot at?"

"Maybe nothing. Maybe everything. And if it does, I don't know why; but it's probably more pertinent than your Brady Quinn."

She waited, but he didn't explain fur-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ther. She had the distinct impression that Morgan knew more than he was saying and that he thought it was important. He saw a possible tie-in with a story he was working on. Morgan had always played his stories close to his vest, one reason why their team had been so short-lived.

He was going to check things out. She'd have to be satisfied with that.

Sarah stood on the balcony of her house, perched high on the side of South Table Mountain, and stared down at the night. She swirled the brandy in her snifter from time to time. Behind her, all the house lights had been extinguished. Only the fire shed any light, its faint, red glow accentuating the shadows, making them dance. She liked to stand alone in the night. It was peaceful. Though sometimes the loneliness seeped into her and caused an ache somewhere at the base of her throat.

Who could say where earth ended and sky began? The lights close below were laid out in geometric precision, like gems on a black velvet cloth: but farther away, urban order gave way to rural disorder. The lights grew progressively more random, until they blended imperceptibly with the chaos of the night sky.

The shopping center at 32nd and Youngfield might well be a stellar cluster. Some of the lights moved; but were they meteors or automobiles? To her left, the mass of Lookout Mountain was a dark nebula, black against black, with only a few lights showing on it.

The police had been sympathetic when she had gone to see them after leaving Morgan's apartment. They had even understood why she hadn't come in immediately. Shock, they had said.

But they hadn't bought her theory that she had been singled out deliberately; that the others had been camouflage. The maniac theory was too attractive, too tidy.

Beam me up, Scotty, she thought. *There's no intelligent life down here.*

No, that wasn't fair. She'd been unable to supply a plausible motive for being the chosen victim. The police had nodded knowingly. The greatest fear was the fear of a meaningless death. What Morgan had called the impersonal motives. The randomness of terrorism strips its victims of individual dignity and importance; and the victim often has a need to find a reason, something personal.

She was marked for death and she didn't know *why*. That was the real terror. The look the gunman had given her. It was impossible to describe, but it left no doubt in her mind. It was recognition and satisfaction and anticipation all at once. Thinking back, she could see that he had been a man who enjoyed his work.

Her survival classes had saved her. She had dived behind shelter automatically, without thinking. But even afterward, she had not resumed thinking; and that bothered her. All her life she had been *making* choices, not *taking* choices. Not yesterday. She remembered telling Morgan how she needed to hold him, and her cheeks burned at the memory. She couldn't remember ever telling anyone that, not even Abe. She had never needed anyone.

She had always despised those around her who blamed their friends, their cir-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cumstances, their bad luck, anything but themselves for their failures. Yesterday, she had been one of them: reacting, not acting; moved by circumstances beyond her control; stunned by the surprise, the viciousness, and, most of all, the feeling of utter powerlessness. Perhaps all along, all those other people had simply had lower thresholds of psychological pain.

Introspective tonight, aren't we? A faint smile played on her lips while she watched the traffic hurtle along I-70. Folks getting an early start on their mountain weekends. No one hunting them. She thought about joining them; of jumping into her Volvo, no, her Blazer, and heading for the High Country. She knew places where no one could ever find her. Places where she couldn't even find herself. The Summit was only an hour's drive away; but she knew places even closer, in the Foothills.

Run and hide. That had been Morgan's parting advice. But running had never been her style. (Except running from Old Town, a voice in her head reminded her.) She wasn't helpless. She knew how to take care of herself. The streets of Chicago had been no safe haven; nor the mountains of Colorado. She was prepared now.

They won't get me the way they got Brady Quinn.

What a peculiar thought that was! That business had been over a hundred years ago.

She reentered the house and slid the glass door shut behind her. She walked four steps across the firelit room and paused. What was it? A sound subliminally heard? A smell lingering in the air? A shadow rock-solid among the shifting shadows thrown by the fire?

There's someone else in the room!

A part of her wanted to collapse, to roll up into a tight ball and make the world go away. I can't take any more of this! But the other part of her was angry. I *won't* take any more of this!

Two quick strides and she was at the fireplace, with the heavy, wrought-iron poker gripped tightly in her hands. She kept her back to the wall. *Like Wild Bill Hickok should have done.*

"It's a bad idea," said a voice in the darkness. "Standing in front of a fire like that. It silhouettes you." It was a man's voice. It sounded amused.

"Who are you?"

"A friend."

"Sure. All my friends are into breaking and entering."

He turned on the table lamp and she blinked at the sudden glare. When her eyes had adjusted, she saw that he held a gun. She felt her stomach drop out of her, but she didn't move. She was figuring distances. It was a small caliber gun. It wouldn't pick her up and knock her down. Or would it?

He pointed the gun straight up. The cylinder popped out and the cartridges dropped to the floor.

"There," he said. "Now I'm helpless."

She looked him over. "Somehow, I doubt that."

He grinned. "I like you. You've got a sense of humor. But you've got to admit that I'm not here to kill you. If I was, you'd've been dead and down the mountainside an hour ago. So I'm not an enemy and, who knows? Maybe I am a friend, after all."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She relaxed a little. He was right. He wasn't here to kill her. But she did not release her grip on the poker, nor did she leave her position by the wall.

He was a stocky man with a brush cut of red hair. His fingers were short and stubby. He had ruddy cheeks. He sat totally at ease in her sofa, as if he were a long-familiar neighbor. There was a smile on his face. Sarah decided from his laugh lines that he spent a lot of his time smiling.

Which proved nothing. The killer had smiled, too.

"Who are you and what do you want?" she demanded.

"I'm a friend . . ."

"Friends have names."

He looked at her for a long moment, then he nodded. "Call me Red," he said.

"Alright, Red. Let's see some identification."

He shrugged and pulled out his wallet. He flipped through the cardholder, extracted an identification card, and held it out to her.

"Put it on the table; then sit on your hands."

He grinned and did as he was told. Sarah stepped up and snatched the card from the coffee table. It was a photo ID card, issued by Utopian Research Associates. It said his name was Red Malone and his occupation was Adjustor. The photograph matched. "How many different identification cards like this do you carry?" she asked, putting it back on the table.

He grinned again. "Who counts?"

She sighed. She was getting tired of standing. She walked to the side of the room opposite the sofa and sat in the stuffed chair facing him. "So, tell me, Red. Why have you broken into my home?"

"To warn you that you may be in danger."

"You're too late. I already know."

He looked sheepish. "Yes, I heard. It was my fault. I didn't know They had anyone local, so I didn't move fast enough. Deep programming is damned hard to uncover. The man himself didn't even know he was one of Theirs, so how could we? A phone call with the trigger phrase spoken, a description of the op, and he was off and running before anyone knew it. Good news in one way, though."

"Good news."

"Sure. It means that They're thin around here. There are better ways to take out targets than unleashing an assassin. That means They panicked and used the first disposable asset that was handy. It was really stupid on Their part."

"They were stupid," she repeated. "Oh, good. I feel much better now."

"You're alive and he's dead," he pointed out, "You're feeling better than he is."

"That was plain luck, pure and simple. If I hadn't hurt my ankle . . ."

"Panic is *always* stupid. But you can't blame Them. They were scared. They knew someone was running an op on them. They saw the signs all around, but never any evidence that could be traced. Then, when you asked about Brady Quinn, you used your own Net Access Code." He wagged a finger at her. "That was careless of you."

"I still don't understand," she replied testily. "Who are 'they'? What's

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

so important about Brady Quinn? And where do you fit in?"

Red's smile faded. He looked puzzled. "You're not kidding me, are you?" He stared at her intently. "If you don't know what I'm talking about, then why were you poking into Brady Quinn's life?"

"Poking into . . . ? What's wrong with that? He once owned a house I just bought. My architect and I found an old newspaper clipping about his being shot, and we thought Brady Quinn Place had a nice ring to it." She almost went on to mention Quinn's connection with the Babbage engines, but stopped herself. It was bad enough that Dennis and Morgan both knew. She wasn't about to tell a total stranger.

He looked worried now. "You weren't investigating the murders of Kenny Robertson or Alice McAuliffe?"

"I don't know who they are."

He bit his lip. "I think there's been a mistake."

A mistake? The word outraged her. "*A mistake!*" she cried. "Someone just tried to kill me, mister! He shot four other people and killed one just to cover it up. And you call it a *mistake?*"

He looked at her. "Mistakes needn't be trivial. Terrible deeds have been done in error." There was a strange look in his eye when he said that.

"Now I really feel great! I was almost killed; but it's okay because it was stupid and it was a mistake. Do you have any other good news? Are you going to tell me what's going on, or are we going to sit here and trade banalities?"

"It would be safer if we traded banalities."

"I'm not safe *now!*"

He pursed his lips and considered. "I can tell you a little bit. Will that satisfy you?"

"Try me."

"You're in no position to bargain, you know. I can walk out right now, and you wouldn't be any the wiser."

"I already know you work for the CIA."

That surprised him. She could see it in his eyes: the way they widened momentarily. Then they shaded over again and he grinned at her. "What makes you say that?"

"The way you talk. 'Running an op.' The assassin was an 'asset.' That's spook talk. And the guy in the park. Brainwashed and hypnotized, you said. Programmed to kill me and be thrown away. That's straight out of some old Robert Ludlum thriller."

"Maybe I read a lot of old thrillers. You're just guessing."

"Yeah, but I guessed right, didn't I?"

He was irritated. "Just for the record, I do *not* work for the CIA. You can call Langley and ask them. They'll tell you they never heard of me."

"I'm sure they will," she agreed. "Now, tell me what I've gotten mixed up in. Dammit, I *deserve* to know."

Red stood suddenly and began to pace, back and forth across the room. He did not approach her, but she instinctively gripped the poker tighter. He stopped and faced her. "Look," he said. "If you really don't know what's going on, it's best if we keep it that way. If I can convince Them that you're harmless, They'll leave you alone."

"I don't understand why anyone would want to kill me. I've never hurt

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

anyone. And why should Brady Quinn matter?"

He shook his head. "I shouldn't have said that; but I thought you already knew. Damn." He resumed pacing. Sarah watched him. Back and forth. Back and forth.

"There's Us and Them," he said after a while. "Never mind who We are or who They are. They have a dirty little secret. So do we; and we both want it kept secret. They'll stop at nothing to keep it that way."

"And you?"

He stopped pacing and looked at her sadly. "We'll stop. At some things." He resumed his pacing. "About three months ago They began getting indications that someone was running an op. . . ." He paused, looked at her, and twisted his lip in a grimace. "I really should watch my phraseology," he admitted ruefully. "Someone was snooping around Their operations," he continued. "Someone very careful. Asking questions that were better left unasked. Tying together bits and pieces that should have remained unconnected. He was in and out of data bases, accessing files that must never see the light of day. They began to get very, very nervous. It would mean the nearest tree or lamppost for Them if it ever got out. And for Us, too, come to that. They told Us what was happening, of course; but We didn't know any more about it than They did."

He stood still and faced her. "Then you tripped the Brady Quinn alarm on the DataNet. They thought that meant the Intruder was close to unraveling the whole thing. So They panicked."

She was bitter. "I suppose it's my fault I was shot at. What should I do, apologize?"

He seemed not to notice her sarcasm. "No, it was unintentional. The point is, They didn't know any better Themselves. It simply never occured to Them that you weren't who They thought."

"So, if They'd shot the real Intruder, They'd have been justified?"

"Justified? Whose Justice? Is a cornered rat justified when it bites? Organizations are like organisms. If they perceive a threat, they'll try to protect themselves. It's simply a natural law of living systems. It doesn't matter one whit if the system is a rat, the Mafia, or the Boy Scouts."

"The Boy Scouts don't shoot their enemies," she retorted.

He jabbed a finger at her. "They would if the alternative were being lynched themselves! I'm trying to tell you what's natural and you keep talking about what's moral. We're on two different wavelengths. When I say a response is natural, I mean just that. I don't have to like it any better than you do. The kind of response depends on the kind of threat, that's all. And for them, the threat is deadly."

"And for you?"

He didn't answer her. Instead, he returned to the sofa and sat down. When he spoke, it was almost to himself. "You can always run from a threat. Fight or flight. Sometimes that doesn't work, either." There was a strange faraway look on his face. Then his eyes focused on her. "Look. None of this helps you. Just lay off this Quinn business. You don't *need* it for your project, do you? Drop it and what have you lost? A few hours in the libraries and the da-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tabases, that's all. I'll talk to Them. Try to convince Them you aren't the one They want."

Red had risen from the sofa and was picking up his bullets, putting them back in his gun. "Do me a favor," he said. "And yourself, too. Stay far away from Brady Quinn and everything connected with him. Alright? Just stick to real estate."

"That was how I started onto Quinn in the first place," she reminded him.

He looked at her bleakly, then walked to the door. Sarah followed.

"When will you tell me?"

He turned at the door. "Tell you what?"

"Whether They agree not to kill me."

He shook his head. "You'll know."

"No. You come back and tell me. I deserve that much."

"Alright," he said slowly, "but only if you promise not to hit me with that poker."

She looked down, surprised. She still gripped the iron poker that she had grabbed from the fireplace. "Fair enough," she replied. "If you agree to ring the doorbell like a civilized human being."

He grinned. "It's a date, then."

After he had gone, Sarah went to her desk and sat down, her hands clasped in a ball on the desktop. She listened to the silence. The antique grandfather's clock was a steady metronome beat in the hallway; but that only emphasized the silence. Her mother's house had always been full of sounds.

She wondered where Fee was. Too damned independent. That was the problem with cats. They came and went as they pleased.

Tick. Tick. Funny. She had never noticed before how *alone* she was. She could name business associates by the score; but where were her friends, her family? She had always prided herself on her independence, her self-reliance; but when had she slipped over the line from independence to loneliness?

That damned clock! She stood and walked briskly to the entrance hallway, where she opened the front of the case and pulled the counterweight down. The clock hesitated, skipped a beat, then stopped.

Sarah closed the door and leaned her forehead against it. The glass felt cool on her skin. After a moment, she stepped back and looked at her reflection. It was her mother's face. A bit younger and more rounded than she remembered her mother; but she could see the resemblance in the eyes and chin.

She listened, trying to hear the sounds of her mother's house. The sounds she dimly remembered from her past. For an instant they were there: The hiss of the teakettle on the old gas range; the *basso profundo* rumble of her father's snores whenever he was home from the road; the gentle drone of her mother as she hummed her beloved ragtime; the screams of her brothers as they chased each other from room to room. *Why did I ever want to escape from that?*

Then the spell faded and it was only her own face in the glass and the only thing she saw in her eyes was fear.

She walked slowly back to her study. It was past time she took hold of herself. *You're master of your own fate*, she told herself. *No one else.* She felt as if she

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

were in the middle of a minefield. Somehow, by dumb luck, she had gotten as far as she had; but she didn't know which way to go from here. *I know too much*, she thought, *and I don't know enough*.

A little knowledge is a dangerous thing.

The cliché made her laugh, it was so literally true. And what can you do? You can't forget the little you know; you can only try to learn more. Enough to be safe.

She paused and put a CD on the player, setting the volume low; loud enough to hear but not loud enough to distract. The first cut, though turned out to be the *New Orleans Hop Scop Blues*, and she almost turned around and rejected it, its melody was so unbearably sad. Then, on second thought she let it play because, underneath the melody was that unconquerable raggy beat.

She sat down at her desk and pulled a notepad in front of her. Taking a pen from the deskholder, she paused in thought. Red had warned her to stay away from anything touching on Quinn. But, if she stayed off the Net, how would anyone know what she did in the privacy of her home?

She looked around the study. Light wood paneling. Cathedral ceiling. Hanging plants. She wondered if the place was bugged. Red would have had the opportunity. How long had he been in the house while she stood innocently on the balcony?

The walls were silent; the quiet, ominous. In the background, the ragtime blues wailed. She turned her back on it and hunched over her desk, concentrating on the pad where it sat in a pool of light from the desklamp. *Let's take stock*, she told herself. *What is it that I know?*

I know that someone is trying to kill me. She wrote that at the top of the sheet and drew a box around it. Staring at the words, she gripped her pen tightly and chewed on her lower lip. Then she took a deep breath and continued.

Why do They want to kill me? Because They think I'm close to uncovering Their secret. *Why?* Because They think I'm the Intruder. *Why?* Because my research into Brady Quinn tied in with whatever it was the Intruder was doing. From what Red had told her, it involved the deaths of two people named Kenny Robertson and Alice McAuliffe. *Why should those deaths worry Them?* Unless They had killed them. Had they been two others who had stumbled on the deadly secret?

She put her thoughts down in schematic fashion, using the fault tree symbols that Abe had taught her years ago. People too often argued in circles, or overlooked alternatives, or even forgot some of their own ideas. Sarah had found that transcribing her ideas diagrammatically helped to organize her thinking. Abe had called it a fault tree, but she called it a why-why diagram, which had always annoyed him. He had scoffed at her use of the method for what he called "soft" problem solving.

Funny. She hadn't thought about Abe for a long time. What had stirred up that memory? She wondered where he was now; how he had made out as a reliability engineer. He had never struck her as having the kind of drive he needed to reach the top. Not like the drive she had. They'd had some good times, the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

two of them; but in the end, he'd left and she'd never been quite sure why.

Never mind that now, she told herself. the point of this exercise is to get at the root cause of my problem, not to reminisce pointlessly over things that didn't matter any more. If they ever did matter.

She made a marginal note: *Find out who KR & AMcA were.*

Sarah tapped her teeth with her pen. This branch seemed a dead end. Without further data, she was no closer to the root cause. Except, she had a hint—only a supposition on her part, really—that she wasn't the first victim.

What about Quinn? That's what had actually triggered the attack. What had she learned about him that was so dangerous? He had been a "special project" statistician for the government before and during the Civil War; and had resigned abruptly afterwards. She toyed for the moment with a "CIA" scenario, like the movie *Three Days of the Condor.* Quinn's resignation from "special projects" had not been accepted. "The only way to leave is feet first." Only, there hadn't been a CIA back then. There had barely been a Secret Service to bodyguard the President. (And not very well, as it had turned out.) They didn't play spook games in those days.

Or did they? She caught herself before she scratched out that line of reasoning. What *had* those special projects been? Something best kept quiet? Something the government wanted kept quiet even a hundred years later? She shook her head. Considering the skeletons that had come dancing out of the closets of recent history, she doubted that anything from the Civil War era could be that controversial.

Besides, from the way Red had talked about Us and Them, she'd had the distinct impression that he was not talking about the government.

That was only an impression. She might be wrong; so she left the branch remain on her why-why diagram.

There was also Quinn's association with the putative Babbage Society. If there was anything extraordinary about Quinn, the Society and its curious machines were certainly tied in with it. Yet, that had also been long ago. How could it have anything to do with the attack on her yesterday?

Hold it. She remembered the foolscap sheet with the list of "trigger events." The one Dennis had kept. there had been several murders noted on it, hadn't there? Quinn and two others. She hadn't been interested in the others before, they'd had nothing to do with her Emerson Street project; but now she wondered if they might not also be part of the pattern that had drawn so tightly around her. What had their names been? She thought for a moment, wishing she had kept a copy of the list. Davis something. Bellows? And Agnes, no Agatha . . . What? Penwether. That was it, Agatha Penwether. And Ambrose Bierce. He had disappeared, but it seemed to fit in with the murders, somehow.

She wrote the names on her diagram. As she recalled, Bellows had been killed some years before Quinn. 1876? Hey! That was the year Quinn had disappeared! Perhaps that was why he had gone into hiding in the first place! Excitedly, she jotted a note on the diagram. She'd have to call Dennis and check the date. Penwether, she thought, was killed later, about 1915 or 1916. A quick

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

check of the encyclopedia told her that Bierce had disappeared in Mexico in 1913. She made another note: *Robertson, McA: when?*

She scanned her diagram, reading what she had written, and a cold knot of dread stole over her. Jesus! Were the people after her and the people who had killed Quinn one and the same? Quinn had hidden himself for sixteen years, but they had found him eventually. Would she spend the rest of her life looking over her shoulder? She shivered despite the fire in the fireplace. Bellows, Quinn, Penwether, Bierce, Robertson, McAuliffe. And how many others? *How many others?*

A new sense of urgency gripped her. What was the connection between the murders and the Babbage Society? Quinn had been a member. Had the other victims been members as well? Was someone hunting them down?

No. Quinn had gone underground, but his partner, Carson, had not. Evidently, the other man had not felt in the same danger. And Edison. He had been associated with them in some way. Then she remembered something that Dennis had told her. How Edison had met regularly with Ford and the others. *A cell of the Society?* No one had tried to kill them.

Alright. Being a member of the Society was not a sufficient condition to become a victim. Was it a *necessary* condition? Did the victims form a subset of the Society?

She opened the center drawer of her desk and pulled out the Index folder she had taken from the fourth floor file cabinets. She scanned the names of authors, chewing on her pen. Jedediah Crawford. The founder. Phineas Hammondton. Isaac Shelton. Hmmm. Wasn't it Shelton who had gotten Quinn his job in the Interior Department? She made a note to check up on him, as well. The papers written by all three bore similar dates: the 1830s and 1840s. Charter members?

Yes, there was Brady Quinn, too. But the later years given for his papers meant he was not an original member. She went through the names again, more carefully this time. There! Davis Belleau. Not Bellows, after all. His papers were also written in the 1830s and 1840s. Excited now, she looked for the names of the other victims. And . . .

No, Penwether and the other were not listed. So, either they were not members of the Society or else they became members after 1892, the last year in the Index.

(And there was another coincidence: 1892 was also the year Quinn was killed. Was that when the office had been abandoned? Was that, in fact, the reason *why* it had been abandoned?)

She remembered how thick the dust in the office had been. How the machines had sat silent and rusting on their heavy, ancient tables. How the stairway to the fourth floor had been concealed; the machine shop below, an apparent front. How, after the brief notice of its foundation, there had been no public record of the Society.

She made another note: *Babbage Society secret.* Their offices, their analytical engines, even their very existence. Was that The Secret? The existence of the Babbage Society? But what difference did that make today?

Unless They were the Babbage So-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ciety; still secret, still deathly afraid of losing that secrecy.

But that only pushed the question further back. Why had the Society been secret?

She cupped her chin in her hands and stared at the wall. Such a long trail of death. And there was no reason to suppose she had all the names. She wondered how many of the other authors in the Index had met untimely ends. Something else to check up on.

Absently, she chewed on the end of her pen. But what about Randall Carson, who was Quinn's associate? Carson had *not* gone into hiding.

They didn't know about Carson. Could that be it? She scanned the names in the Index again, looking for Carson's name. She didn't know exactly what she expected to find. Some pattern. Something *different* about Randall Carson. A special cause, Abe had once told her, always produces a special pattern.

A subconscious impression formed and bobbed to the surface of her mind. Carefully, she went back through the Index and verified it. There were no papers attributed to Randall Carson until *after* 1867, when Quinn came west. In fact, as a few minutes of additional study showed, except for Quinn himself, the names of the authors before and after 1867 formed two disjoint sets. Now what did that mean?

Wait a minute. She took the pen from her mouth and stared into space. Us and Them, Red had told her. Two groups with the same secret. Two disjoint sets. What if the Society had split and one faction had gone after the other?

Sure! Quinn had broken with the Society in 1867 when he came west. Started his own rival society. That's why the names on the *post-bellum* papers were all different.

Great. But when a professional society splits, they usually don't go gunning after each other.

Unless one faction is afraid the other will spill The Secret.

The picture was becoming clearer: Quinn works as a "mole" for the Babbage Society inside the Interior Department, Lord knows why. Then, at the end of the Civil War, he abruptly quits, goes West, and starts his own group. Then Belleau is killed—and maybe others, too. Quinn goes underground and becomes a hunted man. The offices she had found were Quinn's, hidden for the same reason as the man himself. Carson had been the front man, a man unknown to the others. When Quinn is killed, they close up shop.

Then she remembered how the file cabinets had been emptied, apparently in haste. The doorway, boarded up. *Maybe they didn't close up. Maybe they just moved somewhere else.*

It was all starting to make a terrible kind of sense! A thrill ran through her limbs. She was so elated that it took her a moment to realize that she had still not discovered the root cause. She was still looking at symptoms. The tremblers and uplifts and shattered buildings that marked a great earthquake. She had not found the fault line yet. What had set the whole thing in motion? What was The Secret?

They had built mechanical computers. Babbage engines.

So what? Why keep the machines secret? Especially in such a technophilliac era as the Victorian Age? Babbage

LICENSED TO UNLESS
ELECTRONIC REPRODUCTION PROHIBITED

had actually begun public construction of one, but had given it up as impractical. (Or had he?)

Answer: It wasn't the machines themselves, but the way they used them.

To do academic research. Why keep that secret?

It was getting late. Her notepad was filling up with ideas and questions and speculations. Yawning, she flipped the sheet over and started a fresh page. Red had implied a great public outrage; so it wasn't your ordinary, garden-variety secret.

Answer: Not the research itself, but the purpose of the research, demanded secrecy.

Question: What purpose?

Answer: Where did the list of trigger events fit in?

That wasn't an answer. That was another question. She had almost forgotten the list that Dennis had kept. Except that Brady Quinn's murder had appeared on it, it hadn't seemed particularly relevant. Now she wondered. Was there a connection between the other entries on the list and the researches of the Babbage Society?

She went through the Index once more, this time reading the titles rather than the authors and dates. Most of them were gibberish to her. There were frequent references to "yokes" and "ideons." *On the Effects of the Deletion of "Stovepipe" from the Fifteenth Yoke.* That was one of Quinn's. 1864. *Reinforcement of the Ideon Complex Relative to Incandescent Lighting.* Carson, 1871. Years before the light bulb had been invented.

She looked up "ideon" in the dictionary, but found nothing. However, "ideo-" was given as a prefix meaning 'idea.'

On the second page, she found another odd word; but one that she remembered. A paper by Phineas Hammondton entitled *A Cliological Analysis of Outlandish Settlements.* (Outlandish didn't count as odd. She remembered from her language arts classes that the term "Outlands" had originally referred to the lands west of the Mississippi.) But "cliological" she remembered from Dennis's list. His professor friend had said the word would mean "science of history." *Answer: They were using system analysis to study history.*

That made sense. But still, what was the big deal? Why the secrecy? Sure, looking for scientific laws at work in history would have been controversial. After all, look at the fuss people had made over Darwin! But the Victorians had prided themselves on their scientific progress. They wouldn't have reacted any *worse* to the notion of a cultural science than they had to that of a biological science.

Patiently, she continued to read. Something would click. The titles couched in mathematical jargon, she ignored. There was no chance that she would understand their meaning. But scattered among them were other titles in plain English. Or almost in plain English. *The Impact of the Zoopraxiscope on Live Theatre*, 1879. *Rate of Change of the Powers Accorded the General Gov't. vis-a-vis the Sev'ral States & its Significance Regarding the 15th and 23rd Yokes.* Meechum Clark, 1836. *Dates of Incorporation for the various Mexican Territories*, Crawford, 1834. *Effect of Wireless Telegraphy on the*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Propogation of Ideons, Shelton, 1847. *A Geological Appreciation of the Sierra Country and its Likely Effect on the Peopling of the Californias*, J. C. Frèmont, 1841. *Speculations, Stemming from John Hyatt's Artificial Billiard Balls, on the Non-Chemical Nature of the Ultimate Explosive*, Carson, 1871. *Ideons Required for the Encouragement of Aerial Flight*, 1862. *On the Replacement of Rail Roads by Autonomously Directed Vehicles. Expected Results of the General European War, ca. 1910-1915*. That one, by a man named F. P. Hatch, was written in 1882. *The Desirability of the Third Sub-branch Off the 35th Yoke and the Ideons Required for its Realization*, 1853.

An uneasy feeling stole over her. There was something peculiar about some of those titles. Many of them were written long before the events they appeared to describe. *Well, it's a science's business to predict, isn't it?* And if they had been studying history scientifically . . . Yet, there was another tone to the wordings. Something her literary ear picked out. A sense of mastery and challenge. An anticipation of action, not simply observation. Of requirements to be met.

They weren't scientists. They were engineers.

The thought rose unbidden in her mind, and it was a moment or two before she realized what it meant. When she did, the implication stunned her. They hadn't been trying to study cultural systems, at all; they had been trying to control them!

She dropped the Index folder to the desk and stared into space, her mouth slightly parted. *Could that be it?* Had the Babbage Society been trying to steer the course of history through behind-the-scenes manipulation? That would certainly explain their fear of discovery! History was a trail of sorrow and tragedy. Slavery, exploitation, wars, recessions. If people discovered that a specific group of people were responsible . . .

She remembered all the things she had longed to forget. All the symbols of failure. How hard it had been for her father to find jobs; how they could never rent houses in certain neighborhoods; how her mother had died all too young because she couldn't afford the medicine she needed. Sarah clenched her teeth. So, They feared lynching, did They? Well, she might just give a hand with the rope herself.

But, on the other hand, if They were directing history, why not credit Them with the good, as well? The inventions that made life easier; the liberation movements of the last few decades; child labor laws, social security, the safety net of laws and regulations that protected the helpless from at least the worst exploitations.

She felt lost. *So, I'm master of my own fate, am I?* she thought bitterly. When Crawford, and Quinn and the others had scripted things out a hundred and fifty years ago? What a grand illusion. Why *do* things happen the way they do? What if all the accepted reasons: patriotism, economics, communism, bad luck, were a tissue of lies? The roots of our beliefs set in sand, not soil. History had suddenly loosed its moorings, set adrift, and nothing was what it seemed. A charade. A Potemkin village. It was as if her mother's face had slipped just a bit, showing itself to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

be a mask; and behind the loved and familiar features was another person; a stranger, and not her mother at all.

She sat in the dimly lit study, in the pool of light cast by her desklamp, and shivered while the dying flames in the fireplace cast jeering ghosts upon the walls. In her ears the cheerful rag *War Clouds*, was a mockery. She had never felt more alone. ■

CONCLUDED IN NEXT ISSUE

IN TIMES TO COME

Next month's cover story has a slightly peculiar history: instead of the cover being commissioned to fit the story, the cover *inspired* the story. Todd Hamilton did the painting; Michael P. Kube-McDowell saw it and wrote "Nanny"—which would probably not be the first concept to enter your mind if you saw the painting with no advance warning! For that matter, the human-alien relationship the story develops is probably not much like your first guess. . . .

A complete change of pace is "The Third Alternative," Marc Stiegler's first story here in much too long. Anybody reading today's newspapers is well aware that creating a bright future is going to require solving some rather large problems. Much of what you hear about proposed solutions deals with hardware, but hardware inventions alone won't do the trick—it's going to take the widespread development and adoption of new ways of thinking, learning, and evaluating information. Stiegler has some interesting ideas which may be important steps in that direction—and you'll see them applied in a situation with very large stakes.

Distantly related is Tony Rothman's fact article, "A Memoir of Nuclear Winter," which, on one level, is about the latest thinking on that highly publicized subject—but on another, raises disturbing questions about just how such thinking should be (a) done and (b) publicized.

And, of course, we'll have the conclusion of Michael F. Flynn's *In the Country of the Blind.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Probability Zero

OCCIDENTAL INJURY

Arlan Andrews

"And just how did you bring about this collapse of Japan, Inc., Dr. Wu?" the president asked, the familiar lopsided grin earnest and genuine. "Damned if you don't deserve a medal or something," he gestured about the Oval Office, "but I can't ever make this public, you know."

The slim young visitor nodded politely, his Asian ancestry evident in his manners as well as the barest hint of epicanthic fold framing the bright almond eyes that beamed from behind thick glasses. "Sir, my Chinese ancestors never forgave the Nipponese for their atrocities in China during World War Two. My emigrant uncle founded an electronics company here in the United States, determined to fight the Japanese economically." He shifted in his chair and stared directly into the Chief Executive's eyes. "He meant to accomplish by technology what our poor country could not do in that war: revenge our pride and destroy Japan!"

The plot had begun, the young Asian-American related, in his uncle's Massachusetts computer laboratory during a brainstorming session. "Information transfer was the key, Mr. President.

"We had already compared Japan with America in terms of industrial efficiency, educational systems, factory automation, personnel assignments, capital procurement, and investment. As we suspected, these were a dead heat. American industry had learned the best parts of Japanese management techniques, and of course, the Japanese had bought or stolen the best of Western technologies for decades.

"So, our studies showed a draw, an absolute tie, in the resources and capabilities of the competing systems."

The president frowned, but the young man continued. "Still, somehow, Mr. President, the Nipponese continued to out-produce us. They could conceive, implement, and market a new design, a new process, a new product line, in less than half the time we Americans could." He stood and paced the room.

"Then we hit upon analysis of the Japanese system of communication, their written language. Do you know anything about the Japanese language?" When the older man shook his head, the bespectacled one nodded. The question had been rhetorical; few non-Asians understood the mysterious and complex pictographic characters common to Chinese and Japanese.

Dr. Wu continued. "Some of our linguists believed that the pictograms of Japanese gave direct archetypal stimulation to the brain. Those of us literate in several Oriental languages as well as English cannot be so sure. But of one fact we are sure—there are fifty thousand characters that must be learned in order to become proficient in Japanese!"

The president whistled in response. "*Fifty thousand?* How do they ever learn so many? We only have twenty-six letters in English!"

"Takes a long time, sir. Most only acquire the several thousand needed to read a newspaper. But reading and writing is not the problem; printing is. Can you imagine a Japanese typewriter? Thousands of keys? No way!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"But the secretaries," the president protested, "how did they . . .?" The question died on his lips.

Wu smiled. "By hand, sir. They had no typewriters. Imagine trying to run your office if your secretaries couldn't type." The president shook his head. He could not conceive of Washington without the ubiquitous word processor and its typewriter keyboard, the *real* backbone of bureaucracy!

"But then came the computer revolution," the young man said, "and all of that began to change. For the first time, one could store all of the Japanese characters, graphically, in a computer. But because of the same old difficulties in keyboards and printers it took over a decade to implement the proper utilization of word processing in Japanese.

"By design, my uncle's company led the way. We were the first to integrate voice recognition and laser printers in computers—our '*Sheng Feng*' line. We sold the basic 'SF' system at a loss, but the Japanese also had to buy our built-in software and laser printer peripherals.

"We extolled the virtues of a high-ranking Japanese businessman being able to dictate his every thought to a lower-status secretary, who would then play her voice tape into a computer. The laser printer would output written Japanese, multiple copies to as many people as one desired."

"I'm afraid you're losing me, Dr. Wu. What does all of this have to do with the economic collapse of Japan?" He indicated his wristwatch. "You'll have to hurry; the British ambassador is coming by in ten minutes to discuss emergency food relief for Japan."

"Quite simple, sir. You see, when the Japanese had to handwrite all of their interoffice memoranda, they kept the messages terse, to the point, efficient. No wasted time, no extraneous information. Such data transfer allowed each recipient the latitude of interpretation —poetic license if you will—a system capable of eliciting the most talented and most creative responses based on solid but skeletal knowledge."

An evil grin displayed perfect teeth and Dr. Wu licked his lips. "Our new word processor at long last allowed Japanese managers to do what their Western counterparts had been doing all along: to produce long-winded memoranda, unnecessary letters, trite and confusing orders. In a word, empire-building based on nonproductive output of paper.

"We simply targeted the Japanese against themselves. Where once their efforts were directed at outside competitors, my firm's computer enhancements allowed them to gain status at each other's expense. Net result: increased paperwork, decreased production. Once I enabled them to exercise their usual samurai business tactics against the new worlds of paper empires, their economic collapse was predictable." He chuckled and the president smiled in response.

"And what do you call this computer, your word processor, Dr. Wu?" he asked. "The 'SF' line, I believe you called it? What was the Chinese name?"

Wu smiled once more, politely. "Sir, we gave the product line a simple Chinese name but one that has more significance when translated into Japanese, a name from their national mythology, their history. In Chinese we call the computers '*Sheng Feng*.' "

The president shrugged his shoulders, puzzled. The scientist continued. "Sir, '*Sheng Feng*' translates to English as '*Divine Wind*.' " Recognition lit the president's face and he began to howl in laughter.

Dr. Wu spoke quietly. "In Japanese, the word is '*kamikaze*.' " ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mark E. Peeples, Ph.D.

HUNTINGTON'S HANDLE

Some diseases are genetically transmitted in a way that suggests it will soon be possible to predict, but not cure, them. Will future victims want this advance knowledge?

I was the oldest. I was closest to my sister Judy, two years younger than me. I guess I always felt protective of Judy, which I didn't have to since she was so damn bright and independent. I wanted the best for her. I goaded her into doing her best.

When Judy was finishing high school, I was in my second year of college. As always, I was wiser for my mistakes and successes and wanted to share my insights with her. I encouraged her to go to the best school with the broadest opportunities in our home state, Ohio. I had decided that that school was Miami University. I had a friend at Miami, so Judy and I visited the campus for several days in the early spring. Judy loved it and immediately applied for admission and was accepted. My favorite person had a chance to develop her full potential, which I knew would be great. Now I look back on that "help" and wonder if things might be different if I had not meddled in her life.

Judy did great in school, as I knew she would. She decided on a course of elementary education. She had always loved kids. She saw herself teaching first graders and writing children's books someday. I thought that she would follow a more specialized, intellectual line, perhaps literature or psychology. Her response was thoughtful: love of art and literature, or stability and caring develops early in a child and needs encouragement. When I watched her deal with our cousin's little monsters at Christmas, I could see that she loved them and was a natural teacher, and someday mother.

Judy wanted a big family; she wasn't sure if six kids was enough. As a member of "Zero Population Growth," I was horrified. But again, her gift with kids was so obvious that I was willing to admit that six great kids might be an asset to our world. Of course, one major

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

obstacle remained between Judy and her dream of six kids—she needed a husband. But there was time. And after all, that's what college is for.

As our family reunited for the annual 4th of July picnic, in hometown Shelby, I met her "new" friend, Lou. Actually, Judy had known Lou since her first year at college and they had been dating for more than a year. During the few days of the visit, I grew to tolerate this 'thief" and actually to like him. He was interested in my science and we had a common interest in Rolling Rock, brewed one state to the east of us. I saw Judy and Lou several times during the next year. Each time, I saw them becoming closer. I enjoyed their company. I began to see them as a natural couple.

It was really no surprise when Judy and Lou announced their engagement at their graduation party. The wedding was to be a year later. Both had found jobs in the Columbus area. The year between graduation and their wedding would give Judy a chance to start her career teaching first graders and Lou a chance to work with a prestigious architectural firm in Columbus. Both needed the time to establish themselves, and the savings to start a life together.

Late one February night, Judy called me. Lou had left. Disappeared. No forwarding address. She had called his father, but was told only that he was gone. Okay, but gone. Where? No answer; Lou wanted it that way. Judy became more and more desperate as she spoke. What had she done? We talked for two and a half hours without obvious answers. Nothing seemed wrong. Judy had been so happy with her job of creating people out of first graders that she and Lou had been discussing how many and how frequently they should have kids. That dream had vanished.

During the next several months I talked to Judy by phone nearly once a week. The puzzle continued, the guilt feelings persisted. By their proposed wedding date in June, Judy had given up hope of ever seeing Lou again. It was difficult for her to think of another man. She had been so certain . . . But she had to move on and began dating again. Within three months, she was steadily dating Joe, who taught phys. ed. in the same school system. They seemed compatible enough, but he was no Lou. Judy told me over and over that she was comfortable with Joe and that she was anxious to start her family. They were engaged.

Lou reappeared, as suddenly as he had disappeared. At first Judy would have nothing to do with him. But finally, Lou convinced her that she should listen to his explanation. His story sounded unbelievable, but it was true.

Lou's mother had died when he was 16. His first memories of her were happy enough. But he slowly began to realize that she was "sick." That was his Dad's word to explain the dishes she dropped, her forgetfulness, or her sudden furious outbursts. Then the dancing started, the sudden involuntary twists and jerks. She frightened Lou. She told Lou that she felt like a puppet with an unseen demon at the controls. He could barely understand her speech. Her eyes would roll, her eyebrows jump up and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

down, and her tongue bounce in and out. She spent more and more time in deep depressions. The family had watched, and cared for her, as she fell from an active, cheerful provider to a noncommunicating grotesque vegetable. Lou's mother died of pneumonia at the age of 45, after inhaling some food.

The family doctor and a neurologist had diagnosed her condition as Huntington's disease, also known as Huntington's chorea, from the same root as choreograph because of the dance-like movements late in the disease. Because folk singer and songwriter Woody Guthrie died of this disease (not of schizophrenia as diagnosed by his doctors), Huntington's disease is also called Woody Guthrie's disease. Twenty thousand Americans suffer from Huntington's disease. A hundred thousand are at risk.

Lou had experienced, first-hand, the terribly frustrating and painfully slow demise of his mother. He also knew that his mother's father had met with the same fate. When Lou's mother died, the doctor explained to him that Huntington's disease was hereditary, a dominant trait. Careful scrutiny of his family tree showed several other instances of apparently similar degenerative disease.

Lou knew that "dominant" meant that he has a 50% chance of carrying the same Huntington's disease gene. If he has inherited the disease gene, his disease will be similar to his mother's. Did he inherit the gene? There was no way to know. He is now 26. The disease could begin anytime in the next 30 years. Everytime Lou drops a glass or trips over a step, he thinks that it may be starting. The pressure is tremendous on Lou for his own life. But what about the strain he would put on Judy, if they were to marry? He knows how difficult it was for his father to cope with his mother's long illness and he doesn't want to put Judy through that.

Judy was stunned. Lou had never talked much about his mother. He had only said that she had become ill and died when he was in high school. It was obviously painful, so Judy had avoided the subject.

Judy realized that Lou hadn't deserted her for anything she had done or for any selfish reason. He had needed time to think and decide what was most important in his life, and in Judy's life. Now that Lou was back, Judy also realized that she still loved him, perhaps more than before. Within two months they were again planning their wedding. Judy knew that it wouldn't be easy if Lou became debilitated and she had to care for him as his condition deteriorated. She told me that she loved Lou more than she could imagine ever loving anyone else. He had a 50% chance of being healthy all their lives and she would take that chance.

But there was another, even tougher decision to be faced: should they have kids? Judy's love for kids had only increased during her two years as a teacher. Her dream of a big family was still strong. However, it had been their discussion of family size that had triggered Lou's decision to leave.

If they had children, it would be before they knew whether or not Lou carried the Huntington's disease gene. If

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lou did develop the disease, not only would each child have a 50% chance of developing the disease later in life, but Judy would have to care for her younger children as they grew up, while caring for Lou as he became more helpless. After a month of discussions, including several with a genetic counselor and with their pastor, Lou and Judy decided not to have children. I know that this decision was the most difficult one Judy had ever made.

I decided that I had to learn more about this disease. Something must be known about what happens to the nervous sytem of a Huntington's victim, and why. Most studies have found what appears to be programmed premature, localized nerve cell death in several areas of the brain. In advanced cases, the weight of the whole brain may be decreased by 20 to 30%. The underlying biochemical defect that results in selective, premature neuronal cell death is not known. The dominant pattern of disease inheritance suggests a single abnormal gene product, possibly one of the neurotransmitters, a group of small molecules which transmit impulses between neurons. But most studies have found normal amounts and functions of these neurotransmitters in the brain. Until the cause of Huntington's disease is found, specific drug therapies cannot be designed (Martin, 1984).

Attempts to develop a test for Huntington's

If no treatment is available, the next best thing would be a test to determine if a person at risk is carrying the Huntington's gene. The uncertainty of whether or not Lou carries this gene and will develop the disease has been the most disruptive force in his life. But without knowing which of the 100,000 genes, distributed over the 46 human chromosomes, carries the Huntington's trait, there is no place to start.

Years of research have been spent trying to find a "polymorphic" protein that might be inherited with the disease. Polymorphic means that even though a particular protein is made by every human being, there are slight, but detectable differences in the form of that protein. These differences are inherited: if you make "form A" of this protein, it is because one of your parents carried the gene coding for "form A" and passed it on to you.

But how could a protein which is not related to the disease lead to detection of the disease gene? If the gene which codes for this protein is located on the same chromosome, close to the disease gene, it would be inherited with the disease gene. Inheritance of "form A" of this protein would be a genetic "marker" for inheritance of the disease gene. Years of frustrating research were spent without finding a polymorphic protein marker for the Huntington's disease trait.

Proteins are not the only biomolecules which are polymorphic. Deoxyribonucleic acid (DNA) is also polymorphic. In a landmark 1983 paper, Gusella, *et al.* reported the location of a polymorphic DNA "fragment" which was inherited with the Huntington's disease gene. The method used to detect this polymorphism is a bit complicated, but to understand the potential and prob-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lems of this technique, it is important to understand the principles on which it is based.

Locating important DNA sequences

DNA carries the information needed for all the functions of cells and the organisms they compose. DNA is deceptively simple for such an important job. It is composed of two strands of only four building blocks, called bases: adenine (A); thymine (T); guanine (G); and cytosine (C). The "sequence" in which these bases are put together make one part of a DNA molecule different from any other in that individual.

The DNA of a human being is inherited, 23 chromosomes from the father and 23 analogous chromosomes from the mother. To examine an individual's chromosomal DNA, it is extracted from his white blood cells and cut into discrete pieces with a restriction enzyme. Restriction enzymes cut the DNA every place they find a specific sequence (e.g. at the *in A*AGCTT). The same enzyme will cut two individuals' DNA at most of the same places resulting in DNA fragments of identical size. However, a single base difference in this cutting sequence will destroy, or add, cutting sites. The result is DNA fragments which are one size in one individual and another size in another individual. Just like the inherited polymorphic protein varieties, these restriction fragment length polymorphisms (RFLPs) are inherited.

A RFLP for Huntington's

RFLPs are detected by cutting an individual's DNA with a restriction enzyme and then picking out a few of the DNA fragments. After cutting, the individual's DNA fragments are separated by size in an electrical current. Specific fragments are located with a DNA "probe," a piece of human DNA previously removed from a chromosome, inserted into a bacterial virus and maintained in the laboratory. The probe DNA is labeled with radioactive phosphorus (^{32}P). When it is added to the separated fragments, it will locate and bind only to its DNA sequence. The result of such an experiment is shown schematically in Figure 1. (Don't be alarmed if you don't completely understand Figure 1 on the first look; parts of it will be clarified in the following paragraphs. If you want to understand the details of how all this works, just take your time going through the next couple of sections, referring back and forth between text and figures as necessary. Or, if you don't care about the details, you can skim lightly over these sections, just watching for the important conclusions.)

Gusella, *et al.* (1983) collected 12 DNA probes which were able to detect RFLPs between individuals. They set out to examine the DNA from members of a large American family with Huntington's disease. The task was mammoth: 100,000 genes vs. 12 probes. Incredibly, one of these probes, G8, from Tom Maniatis at Harvard (Lawn, *et al.* 1978) detected a RFLP which appeared to be inherited with the Huntington's disease trait!

To test the association between the Huntington's disease trait and the G8 RFLP, a second family from a unique community of Huntington's disease car-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

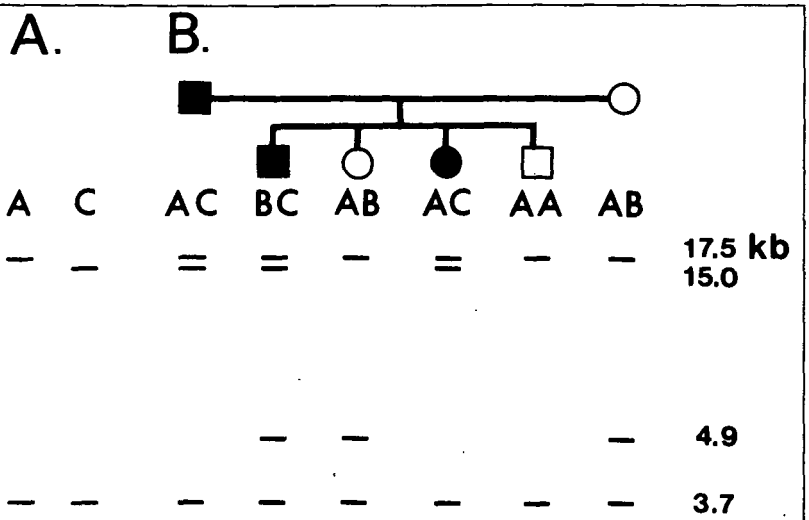


Figure 1. RFLP pedigree of a family with Huntington's disease. Males (□) and females (○) are indicated in the pedigree on the top line. Those affected by Huntington's disease symptoms are represented by closed symbols (■ , ●). DNA from each individual's white blood cells was cut with a restriction enzyme and the fragments were separated in a gel by an electrical current. The G8 DNA was labeled with radioactive phosphate (^{32}P) and allowed to find its DNA sequence among the fragments. The excess, unbound ^{32}P-DNA was washed away. The bound radioactivity was detected by exposure to X-ray film which is sensitive to the β-emissions from ^{32}P. The pattern shown in Panel A is hypothetical. If an "AC" individual's paternal chromosome could be separated from his maternal chromosome, one would be "type A" and the other "type C". In reality, this individual would have the composite A+C pattern seen in the first column of Panel B. The key for deciphering these RFLP patterns is presented in Figure 2. This figure was assembled for illustrative purposes from Gusella et al. (1983), and Gusella et al. (1984).

riers on the shore of Lake Maracaibo, in Venezuela were tested. This pedigree included 3,000 inhabitants, many of whom had inherited the disease gene. It appears that a European sailor, in the middle 1800s brought the disease which has been passed from generation to generation. All Huntington families for which data is available can be traced to Europe, probably the result of a single original mutation which has now been passed down through many, diverse family trees.

Problems for a Huntington's test

Now that a RFLP which is inherited with the Huntington's disease trait has been found, we should be able to test Lou to determine if he truly has anything to worry about, right? Wrong, very wrong. The G8 RFLP was used as a predictor in the two large families that Gusella, *et al.* (1983) tested, but only because they developed an extensive

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

family pedigree for the marker, and the disease. To understand why the determination of Lou's G8 RFLP pattern, alone, cannot predict his future, it is important to understand more about how the RFLP system works and why a large family pedigree, and some luck, is required.

The first complicating factor is that each individual has two copies of each chromosome, one inherited from his mother, the other from his father. *If* these two sets of chromosomes could be separated before the RFLP analysis, the DNA fragment pattern might look like that shown in Figure 1A. The father's "type A" pattern would yield 17.5 and 3.7 Kb (kilobase: 1,000 bases) fragments, while the mother's "type C" pattern would yield 15 and 3.7 Kb fragments. Unfortunately, the father and mother chromosomes cannot be separated before the RFLP analysis. The actual result of such an analysis is a composite of the type A and C patterns, as found in the first column of Figure 1B. These composite patterns can be interpreted logically and each family member can be assigned a "type" designation, as described in Figure 2.

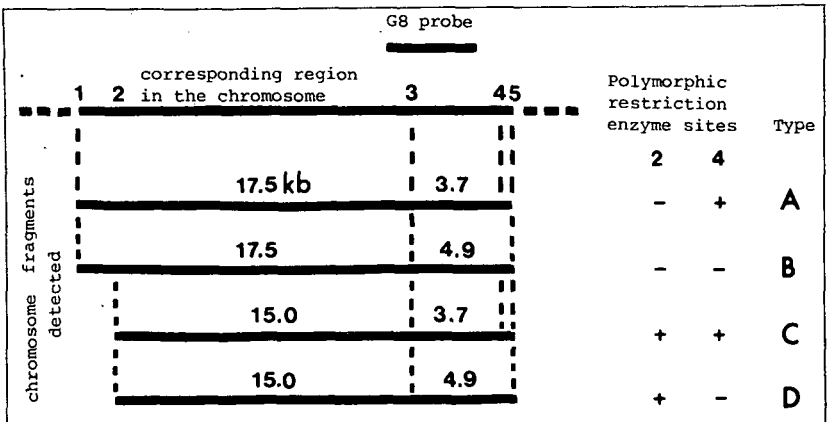


Figure 2. RFLPs of the G8 sequence found in human DNA. The G8 probe DNA is presented at the top of the figure, directly over its sequence in human DNA. The second line shows the possible restriction enzyme cleavage sites (numbered 1-5) which have been found in the corresponding region of human DNA. The key is that cleavage sites 2 or 4 may, or may not, be present in each copy of this DNA from a particular person. The presence or absence of cleavage at site 2 or site 4 will determine the size of the fragment. G8 will bind to any fragment with which it shares nucleotide sequence. In other words, even the large 17.5 Kb (or 15.0 Kb) fragments from this human genome segment will be recognized by G8 because it shares the base sequence at its right and with G8's left end.

The 4 possible combinations of genome fragments are presented in the bottom 4 lines. A summation of the presence or absence of restriction site 2, or site 4 is shown on the right. Each combination is assigned a "type" (A-D). Since each individual has two copies of each chromosome, his RFLP type can be described by 2 letters (AA, AB, BC, etc.), as shown in Figure 1. (Modified from Gusella et al. (1983) and Gusella et al.(1984))

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Knowing which family members were affected by Huntington's disease, and determining that the G8 RFLP "type C" was always found in those individuals with the disease (Figure 1B) led Gusella, *et al.* (1983) to the conclusion that the "type C" pattern was associated with the disease. But this conclusion is only valid for that particular family. The "type C" pattern is also found in 25% of the non-Huntington's population. These normal people have the normal "Huntington's gene" associated with the G8 marker. In other words, the association of the G8 marker with the disease gene is only informative in families where the G8 marker has been rigorously associated with the disease trait. This association can only be accomplished with a large family pedigree, such as the ones Gusella, *et al* (1983)

Unfortunately, a few exceptions were found to the original rule that the disease is associated with only one G8 RFLP type in one family. A "switch" was found in a member of one of the original families (Gusella, *et al*, 1984) and two other switches were found in two other families (Folstein, *et al*, 1985). These switches result when a part of the chromosome from one parent recombines with the same part of the chromosome from the other parent. The result is a chromosome with one end from the father and the other end from the mother, as shown in Figure 3. The farther the disease gene and the G8 marker are from each other on the chromosome, the more likely an individual with a switch will eventually be found.

After their first study, Gusella, *et al.* (1983) estimated that the disease gene and the G8 marker were within several million bases of each other. But the number of switches which have been found increases that estimate. In fact, this finding was foretold in the original study, since the Venezuelan family disease gene was associated with the "type C" pattern while the American family disease gene was associated with the "type A" pattern.

Nevertheless, the G8 marker is strongly associated with the Huntington's disease gene. But it is not close enough to make a completely accurate diagnosis, even in the large well-studied families (Folstein, *et al.*, 1985). G8 will be useful in searching for closer markers and eventually finding the disease-causing Huntington's gene. G8 has already narrowed the search to 0.1% of the 3 billion bases of total human DNA.

Prospects for a better test

The original report of Gusella, *et al.* (1983) also located the G8 probe, and therefore the Huntington's disease gene, to chromosome 4. Presently, several groups are working along chromosome 4, attempting to get closer to the disease gene. James Gusella (at Massachusetts General Hospital) is looking for a second marker for the disease gene, on the opposite side from G8. John Wasmuth (University of California, Irvine) is making human-mouse cell hybrids which contain chromosome 4 as the only human chromosome. These cells will be used to generate a battery of chromosome 4 specific probes for further linkage studies. David Schwartz and Charles Cantor (Columbia University) have developed techniques for isolation of very

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

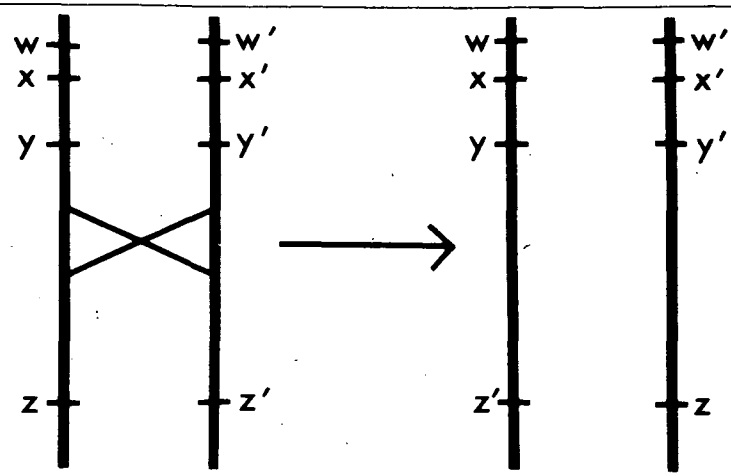


Figure 3. Switching (recombining) DNA between chromosomes. Recombination between the maternal and paternal copy of the same chromosome in an individual is a normal occurrence. The site at which two chromosomes recombine is random. Therefore, the likelihood that recombination will separate two markers is related to the distance between them. A long distance between the markers, as between X and Z, results in a high likelihood that recombination could take place between tham and separate them. A short distance between the markers, as between X and Y, results in a low likelihood that recombination would occur between them.

If the recombination shown here took place, the DNA fragments recognized by the G8 probe (Z) would be separated from the Huntington's disease gene (X). If a new DNA probe were found which is inherited with the disease gene in his ancestors as well as in his own "recombined" DNA, the new probe would either have to be closer (Y) to the disease gene (X), or on the other side of it (W).

large DNA molecules. Such a large DNA molecule, containing the G8 probe sequence, may be identified and sections of it cloned to make a series of DNA probes to test on the family pedigrees (Cantor, 1984).

Ironically, the few family members in the original studies where chromosome switches were found will be useful in narrowing the search to a smaller area, closer to the gene location. If a new marker is found which associates with the disease gene in these cases, it must either be closer to the disease gene than G8 is, or on the other side of the disease gene, as described in Figure 3.

Eventually, these techniques will provide a physical map of a few million bases in the vicinity of the Huntington's disease gene and a set of markers for all the DNA in this region. RFLPs will continue to be used to find markers whose inheritance matches more and more closely the disease gene in a series of families.

These approaches should be able to lead researchers to within 500,000 bases of the disease gene. The exact location

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the Huntington's disease gene runs into a roadblock at this point. The DNA polymorphisms which have been so useful in getting this close are now a hindrance. If the entire DNA sequence of this region were determined, there would be several thousand base differences between individuals. Which one represents the Huntington's disease mutation? Without knowledge of the protein produced by this gene, there is no direct way to find the gene.

How to locate a gene in a haystack

The only thing known about the Huntington's disease gene is that it causes degenerative neurologic disease in afflicted adults. How might the disease gene be isolated using this function? It is now possible to insert foreign genes into mice by injecting DNA into fertilized eggs. About 10% of the time the DNA inserts into a mouse chromosome and becomes part of that chromosome. As the embryo divides, so does the foreign DNA in the chromosome. The gene is even passed on from generation to generation. Different sections of chromosome 4 from a Huntington's disease patient could be injected into fertilized mouse embryos, and mice which have incorporated the human DNA can be selected and observed. Since the Huntington's disease gene is dominant in a human, it might also be dominant and cause a degenerative neurological disease in a mouse. An advantage to using the mouse is that it reaches mid-life, the time of Huntington's disease in humans, within a year after birth. Of course, there is no way of knowing whether this human gene would function in a mouse. There is some hope that it might, since brain proteins of many animal species share structural similarities.

If a piece of DNA from a Huntington patient would cause disease in a mouse, this DNA could be divided into smaller and smaller sections and injected into mouse embryos until the smallest disease-causing piece is isolated. The analogous piece of DNA from normal and Huntington's disease patients could then be completely sequenced and compared, looking for a common mutation in the patients. These studies will take many years to perform but there is hope that they might succeed.

Precise location of the disease gene would be the ideal starting point for the ideal genetic test. That goal may still be far off. However, an RFLP marker closer than G8 to the disease gene should be found in the next few years. It will then be possible to make a test for the disease gene available to many of the potentially affected individuals, providing the individuals have DNA from enough affected and unaffected relatives to develop a pedigree. As an important step toward preserving this information, a national DNA bank has been established at the Indiana University Medical Center, Indianapolis, to store specimens from family members whose health is jeopardized. Blood samples are drawn and the DNA is extracted and preserved. These DNA samples will be useful in the future to establish family pedigrees.

To test or not to test

Of course, if a test is developed, many people with Huntington's disease

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in their family will choose to be tested. Recent studies of people in this situation have revealed that 75% would like to be tested, to know if they will fall victim to Huntington's disease (Koller and Davenport, 1984). Such a test would have to be extraordinarily accurate. It would have to be carried out in duplicate, in two laboratories and only reported to the patients when both tests agree.

Lou has been forced to live with the uncertainty. Two years after he had married Judy, he began noticing the early signs of Huntington's disease; stumbling for no reason, dropping a glass here and a dish there. He became convinced that the disease was starting. He didn't tell Judy, for fear of upsetting her. Finally he felt certain. Lou had watched his mother deteriorate and he had vowed not to let his life end in the same slow, helpless way. One Saturday afternoon, he set out for the grocery store and drove off the road, into a telephone pole. Lou survived with a broken arm and leg. He told Judy that he knew that the symptoms had begun. A neurologist checked him out but found no signs of the disease. But Lou had entered a deep depression. He had to leave his job. It took Lou a year to regain his equilibrium.

Lou would take a Huntington's disease gene test, if it were available. A negative result should alleviate his fears and might well have saved him from his accident and slow recovery. However, a positive result confirming that he has the Huntington's disease gene would be tantamount to a life sentence. How would that affect the quality of his life? On balance, would it be worse than not knowing? Most people surveyed felt that if they were to be affected, they would like to know in order that they might make plans for their own care and the care of their family.

A test for Huntington's disease would be a unique situation. It would be a test for a disease which has no treatment, no specific determination of when it will begin, and no hope of survival. Even a diagnosis of cancer offers hope in treatment regimens. The only hope that a Huntington's patient might have would be for a new treatment. If such a test result were reported to a patient, it should be by a health care team of an informed neurologist, geneticist, psychiatrist, and a social worker (Wexler et al, 1985). A positive test result might lead to depression or suicide.

A test for the Huntington's disease gene might also be required by employers or insurance companies to avoid taking bad risks (Kolata, 1986). The cost of caring for a Huntington's disease patient can be very high. However, it hardly seems fair to deny my brother-in-law employment, or medical care when he may really need it.

Lou is back to work in a new, but smaller architechural firm where he is doing more than ever, and loving it. Judy is still teaching and loving her first graders. They have struggled with their decision not to have children for five years. They are still not sure whether or not Lou has the disease gene. Of course, if Lou and everyone in his situation would remain childless, Huntington's disease would be gone in a single generation. The chances that Lou

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and Judy would have an affected child are 25%: the average of a 0% chance (if he has not inherited the disease) and a 50% chance (if he has inherited the disease gene from his mother). With their lives back together, and a resolution to live life, however it comes, Lou and Judy did decide to have a baby. Last spring my sister Judy gave birth to my favorite niece. They are taking a chance. But they are so happy with Suzie that right now it all seems worthwhile. Their new decision is to have only one child.

If a test had been available, perhaps Judy could have undergone amniocentesis early in pregnancy. DNA from the white blood cells of her fetus could have been tested for the Huntington's disease gene. If it were found, Judy would have had the option of abortion. Of course, if the fetus did have the disease gene, it would mean that Lou also had the gene. He would learn in a roundabout, but just as accurate way, what fate he had to look forward to.

None of these questions and problems have easy answers, but this work in molecular biology is building a road which could open new options for Huntington's disease families. Eventually, this work will lead to the discovery of the Huntington's disease gene, its normal function in the nervous system, and its abnormal function in disease. Similar research with Duchenne's muscular dystrophy, cystic fibrosis and other genetic diseases has located DNA markers which are inherited with these diseases. In fact, the actual gene which appears to cause Duchenne's muscular dystrophy has recently been located (Monaco *et al.*, 1986). These workers found that several Duchenne's patients had lost a specific piece of chromosomal DNA. Molecular biology is also being applied to other hereditary disorders like neurofibromatosis, familial Alzheimer's disease, and manic depressive illness.

Meanwhile, I am a proud uncle of a most beautiful niece. Lou and Judy and one-year-old Suzie are living a normal life in a busy household. Will Lou and Suzie take the test if it becomes available? They haven't decided. Perhaps Suzie should make her own decision when she is old enough. Perhaps someday, when we learn what this gene is and does, and how it changes in the disease, a treatment can be developed to alleviate the symptoms. Maybe even gene therapy will someday be available to replace the disease gene. It is unlikely that these therapies will be developed in Lou's lifetime. I hope he will never need them. ■

REFERENCES

Cantor, C.R. 1984. Charting the path to the gene. Nature 308:404-405.

Folstein, S.E., Phillips, J.A., III, Meyers, D.A., Chase, G.A., Abbott, M.H., Franz, M.L., Waber, P.G., Kazazian, H.H., Jr., Conneally, P.M., Hobbs, W., Tanzi, R., Faryniarz, A., Gibbons, K., Gusella, J., 1985. Huntington's disease: two families with differing clinical features show linkage to the G8 probe. Science 229: 776-779.

Gusella, J.F., Tanzi, R.E., Anderson, M.A., Hobbs, W., Gibbons, K., Raschtchian, R., Gilliam, T.C., Wallace, M.R., Wexler, N.S., Conneally, P.M., 1984. DNA markers for nervous system diseases. Science 225: 1320-1326.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Gusella, J.F., Wexler, N.S., Conneally, P.M., Naylor, S.L., Anderson, M.A., Tanzi, R.E., Watkins, P.C., Ottina, K., Wallace, M.R., Sakaguchi, A.Y., Young, A.B., Shoulson, I., Bonilla, E., Martin, J.B., 1983. A polymorphic DNA marker genetically linked to Huntington's disease. Nature 306:234-238.

Koller, W.C. and Davenport, J., 1984. Genetic testing in Huntington's disease. Annals of Neurology 16:511-513.

Kolata, G. 1986. Genetic screening raises questions for employers and insurers. Science 232:317-319.

Lawn, R.M., Fritsch, E.F., Parker, R.C., Blake, G., Maniatis, T., 1978. The isolation and characterization of linked δ (delta) and B-globin genes from a cloned library of human DNA. Cell 15:1157-1170.

Martin, J.B. 1984. Huntington's disease: *new approaches to an old problem.* Neurology 34:1057-1072.

Monaco, A.P., Neve, R.L., Colletti-Feener, C., Bertelson, C.J., Kurnit, D.M., Kunkel, L.M., 1986. Isolation of candidate cDNAs for portions of the Duchenne muscular dystrophy gene. Nature 323:646-650.

Wexler, N.S., Conneally, P.M., Houseman, D., Gusella, J.F., 1985. A DNA polymorphism for Huntington's disease marks the future. Arch Neurol 42:20-24.

ABOUT THE AUTHOR

Mark Peeples was born with an interest in biology. His interest was fed hors d'oeuvres in high school in Pennsylvania and Ohio, followed by appetizers at Heidelberg College in Tiffin, Ohio, including a National Science Foundation project examining the effects of sewage microbes on the Sandusky River. With a B.S. from Heidelberg, Mark began devouring his main course at Wayne State University Medical School in Detroit, Michigan, the main ingredient being viruses, especially respiratory syncytial virus, a major cause of infant disease. Since antibiotics are ineffectual against viruses, he was armed instead with a Ph.D., in 1978. At the University of Massachusetts Medical Center in Worcester, Mark had dessert: an easier, model paramyxovirus, Newcastle disease virus. He is now a trained chef, an Assistant Professor of Immunology/Microbiology at Rush-Presbyterian-St. Luke's Medical Center in Chicago, Illinois. He instructs medical and graduate students in the cuisine of bacteria and viruses while maintaining a strong research interest in Newcastle disease virus and hepatitis B virus, supported by the National Institutes of Health and the American Cancer Society.

Mark had two motivations in writing this article. First, the challenge of describing RFLP's to an audience of non-molecular biologists. The second motivation was a personal one. He and his wife Becky watched as the story of "Lou and Judy" was lived by two of their best friends. Of course, the names and some of the details were changed, but the essence of Lou and Judy's story is very true. Mark hopes that this article will help you understand the peculiar tortures of Huntington's Disease, the tremendous progress toward tracking it, and the well-founded hope that we will soon have the tools to outsmart it.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on gaming

Matthew J. Costello

Recently, I was asked to write the "Gaming" entry for the forthcoming *New Encyclopedia of Science Fiction*. Piece of cake, I thought. After all, as Miss Piggy might offer, who could be more qualified than moi.

Unfortunately, the diminutive task proceeded about as smoothly as a tireless Mack truck climbing the Sierra Madres. And it wasn't simply the encapsulation of the history of science fiction games that gave me trouble. That proved difficult enough. Trying to decide which games were important, which ones had impact, was the kind of task not suited to my scatter-shot intellect.

But a question that editor Jim Gunn directed me to ponder gave me considerable pause. Namely, what is the future of science fiction gaming?

It started me thinking seriously about an answer to this intriguing albeit inconsequential question. My thinking led to some research, including an interview with Lucasfilms Games and, as Jimmy Olsen cub reporter might say, "I've got a big scoop, Chief."

One of the recent developments also happens to be one of the most insidious. A variety of companies are creating games and toys that interact with the TV, according to *Video Marketing Newsletter*. Select Merchandise will be marketing a videotape and game system that allow the action to spill right into the living room. You'll be able to shoot a character on the tape and they'll shoot back, with the gun recording any hits or misses.

Axlon, Mattel, and Galoob Toys are all preparing interactive toys that will respond to television shows. This dream of a perfect tie-in (with the shows featuring a five-minute interactive segment that only those with the appropriate toy will enjoy) has already aroused the concern of ACT, the children's television advocacy group.

The VCR game category has done remarkably well (with Parker Brothers' *Clue* one of the top-selling videotapes of 1986), even if most of the games have lacked imagination. CSI Inc. has two games ready for release, *Mickey Mantle Baseball* and *Pele Soccer*, but the really interesting item is the video *Magic Secrets*. *Secrets* comes with a videotape containing an interactive magic lesson and material for over a dozen tricks.

Videonics has just released a device called *DirectED*, designed to be a home video editor. But, since it comes with a computer's ability to store and access various screens on a videotape, it has the potential to become a full-fledged interactive system—ideal for games. And, best of all, it uses the VCR—now a commonplace object found, as they say, in the home.

But it's the interactive digital disc, or the CDI, that many game designers hope will usher in a new age of games. There have been laserdisc games in the

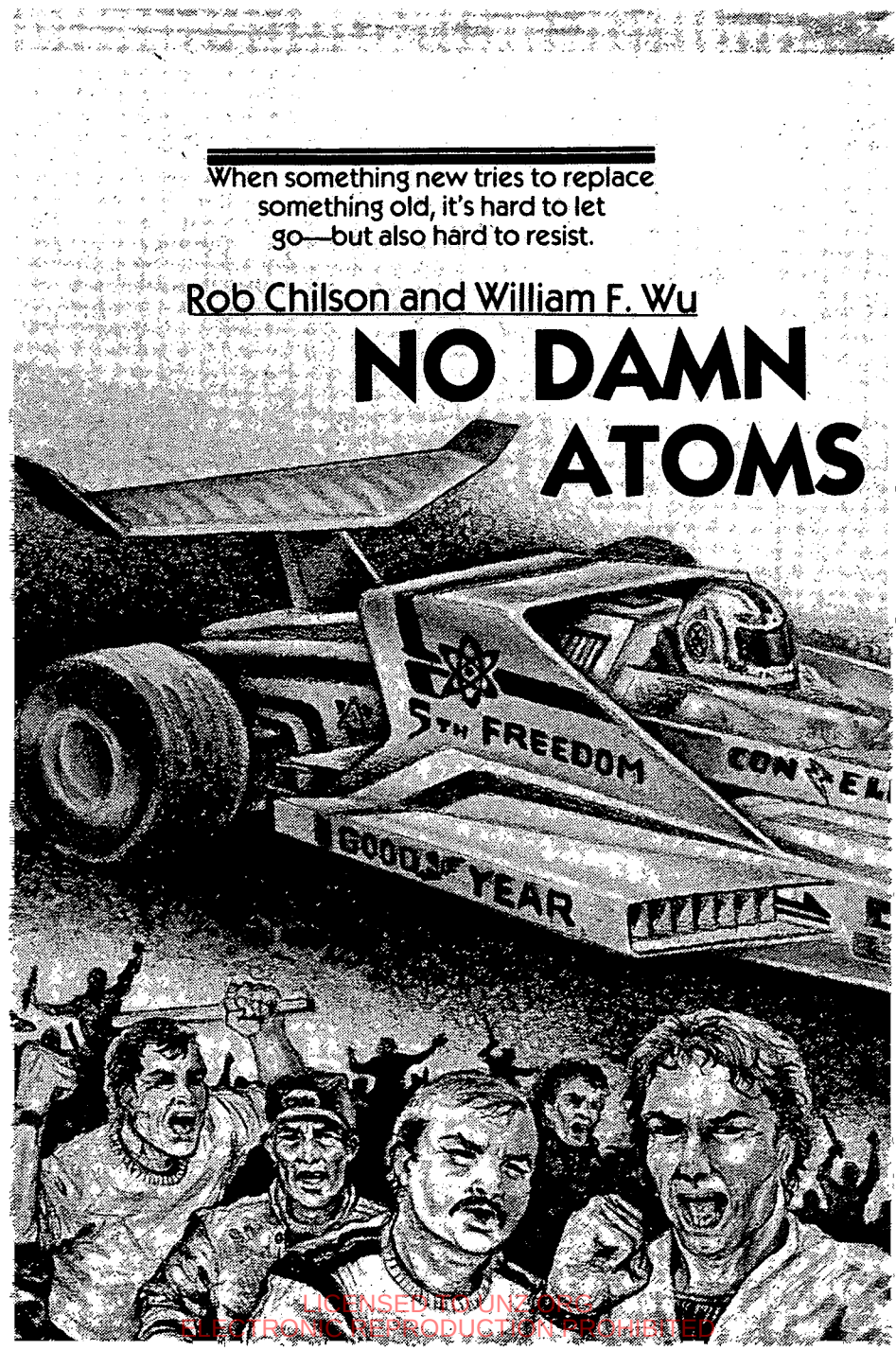
Continued on page 178

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

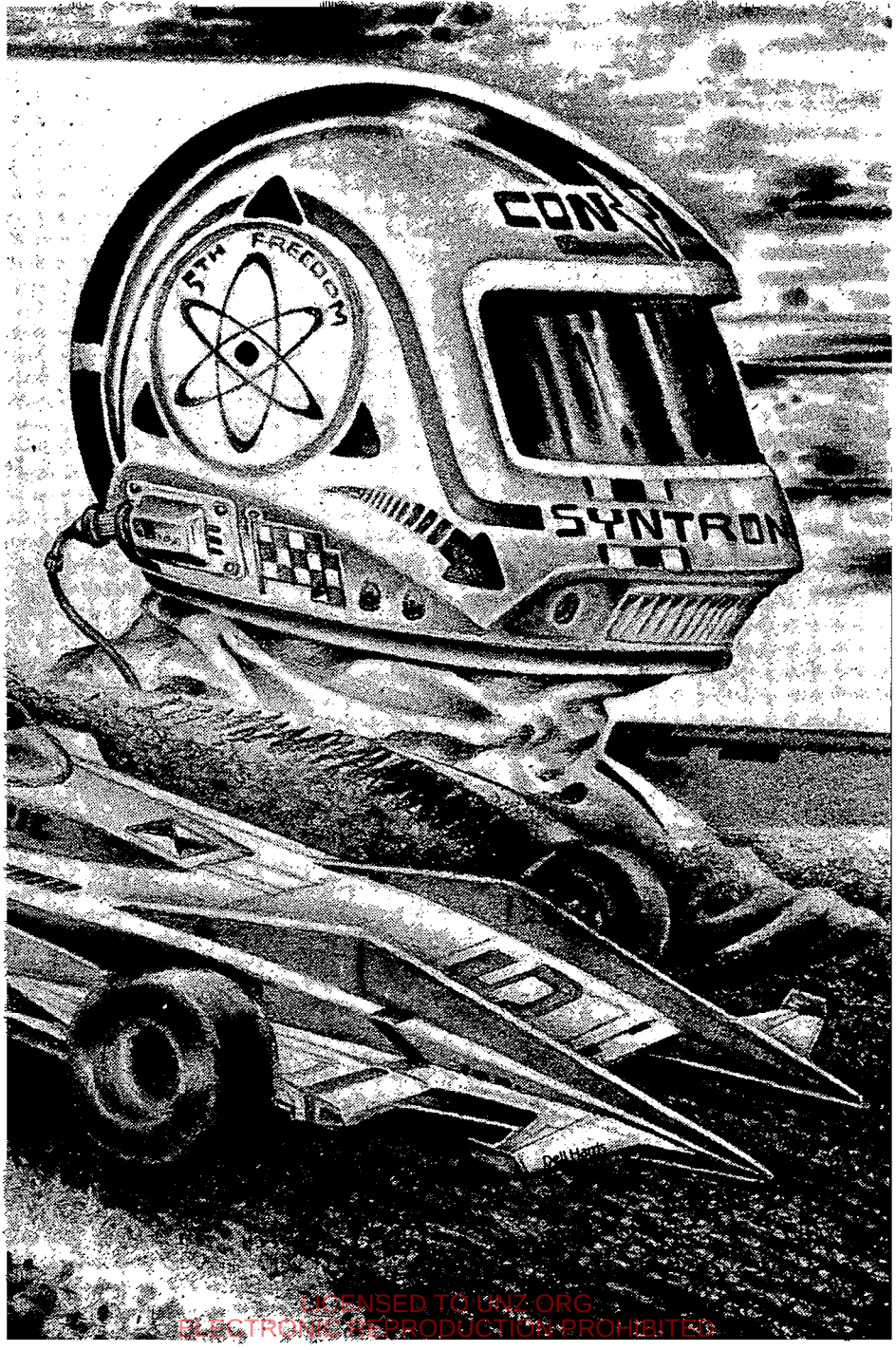
When something new tries to replace something old, it's hard to let go—but also hard to resist.

Rob Chilson and William F. Wu

NO DAMN ATOMS



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Here she comes," said Dwight.

He and the other mechanics went to the rail and looked to their right. Three sleek Formula One cars rocketed past with earth-shattering roars from their unmuffled exhausts. The fourth car —bright red and bright yellow and even smaller than the first three—was nearly silent. Only the thrum of tires and the hiss of cloven air accompanied it. On its side were the blue mark of Consolidated Electric, the sign of the atom, and the name, *Fifth Freedom.*

"So that's the Atomic Bomb," said Bob Yang. He stood with his hands in the pockets of his one-piece, purple and gold coveralls, nodding to himself.

Dwight Moore started to speak, but was drowned out by the roar of another car coming on. *Fifth Freedom* went into the turn as they watched, footing it like a gleaming cat, and again remarks were drowned out by roaring engines.

Dwight leaned to catch Paul Cline's words: "Never catch me in one of them things."

Melanie agreed enthusiastically but inaudibly. As they turned from the barrier, Paul tripped and Dwight steadied the two of them. Paul was nearly as tall as Dwight, but lacked Dwight's massive build. Melanie barely came up to his shoulder.

"Probably fry you right there in your seat," Melanie said.

Bob Yang shook his head vigorously, tossing his cascades of black hair. "Not that bad. I have a can in my house. But in a car . . . "

Melanie turned her short, chunky form to face Dwight. "What if there's a wreck?"

"Here she comes!" someone called.

No! Dwight thought, with a sick pang. That damn atomic car couldn't have circled the field that fast.

It hadn't. This car was purple and battered and had *Christine's Dream* on its side. Christine's golden helmet gleamed as she passed, giving them a jaunty wave. They cheered and waved back.

"Looks good so far."

"Took that turn well."

Dwight had been concentrating on the sound; he had the ears almost of the legendary Smokey Yunick. "Engine sounds good."

Four more cars passed as they shouted opinions to each other, then one more: quiet but for the thrum and swoosh. They fell silent, looking after it.

Fifth Freedom again cornered smoothly and was gone.

"Who's driving that sucker?" asked Bob Yang, Christine's driving partner.

"Clint Atchison," said Melanie. "Tradin' off with Al Stevenson."

"Atchison! Why'd he get himself tied up with a thing like that?" Paul Cline asked, seconding Dwight's reaction. "He coulda been a champ."

Melanie shrugged. "Well, he got beat at Daytona by that new woman driver Christine thinks so much of. Could be he's mad."

"Maybe he thinks he can win," said Bob Yang, smiling.

"Maybe he can," said Dwight quietly. "If that thing's as good as I read." His voice was mild. He had learned early in life that his great size easily intimidated people if he wasn't careful.

He was also the reader in the group. They all looked up at him now.

"What's it got?" Melanie folded her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

arms in front of her smudged purple coveralls.

"Same kind of nuclear-electric can they're startin' to sell for household use."

"I got one," Bob Yang said again. "Wife and me agreed to it. Payments are less per month than all the utilities used to be. We don't have to worry about blackouts or heat in winter—"

"What about safety?" Melanie demanded.

"What's to go wrong, right, Dwight?" Bob glanced at Dwight, turned back to her. "Know how those things are sealed? It's like a bank vault. See, it's laminated armor—hard steel, soft steel, copper, titanium—gettin' into it would be a mess, ruin any saw. And if something should go wrong with it, you send it to the factory and they unscrew the end there. It's got a combination they can unscrew to replace the fuel rods and so on."

Melanie picked up a wrench and put it down. "But if something goes wrong," she said insistently. "Then what? How often do you send it in? They got loaners at that factory? Come on, Bob, nothin's perfect. What if it gets hot and explodes? Carbon 14 all over the place—" shouting over the engines.

"I don't think so; do you, Dwight? I mean, they say these things ain't supposed to go wrong."

"Too early to say how often they'll break down," said Dwight uncertainly. "Not enough of them been runnin' long enough."

They all waved as Christine went by again.

"You think it might get overheated and break some night when Bob and Karen are usin' every appliance in the house?" Paul squinted his faded blue eyes hopefully.

Dwight shook his head. "Those things ain't got any moving parts; nothing to break. And the hotter they get, the more power they put out. They've got thermoelectric elements as well as the particle collectors. Maybe something might go wrong with the exciter system. It sprays the fuel with subatomic particles. But that's about all."

They broke off again as *Fifth Freedom* whipped past.

"*Fifth Freedom*," Melanie said, as though it were a curse. "What's it mean?"

"Freedom of power," said Dwight.

"Freedom from utility companies," said Bob Yang, with a grin.

"Okay, so it's the same can households have," said Paul. "The exciter puts—what's the word—stress on the atoms and since they're already radioactive, they break down. Uh, right?"

"That's right," said Dwight. He thought a moment, remembered some figures. "Half-life of carbon 14 goes down from like five thousand years to like fifty or even five. That raises power output a hundred or a thousand times, while the exciter's on. And they use all those dangerous atoms people thought we'd have to bury forever."

"They use 'em up," said Bob. "It's a good idea. And I'm doin' my part and savin' a bundle."

"But the car?" Melanie said quietly.

Dwight ran a hand through his sandy hair, and considered. "It's got the legal minimum of three pit stops we all have, so it don't save any time by not havin'

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to refuel. But the handling, now. That can's only as big, say . . . ''

''Big's a five-gallon bucket.'' Bob sketched a shape in the air. ''Weighs about seventy pounds.''

''Kind of light, but if they moved it forward, it would balance,'' Dwight mused. ''Power output is better than any gasburner engine here. Thousand, twelve hundred horse, I guess. And they got one of these new variable-speed electric motors built into the hub of each wheel. That gives 'em four-wheel drive with the same as a limited-slip differential on each axle.''

Paul Cline nodded somberly. ''Great handling qualities, then, light weight, and lots of power. Halfway well driven—and Clint will give it more than that—and it can wipe the tailpipes of every car here.''

''Poor Christine,'' said Melanie softly.

Their best hope for *Christine's Dream*, realistically, was a third place finish. It would be difficult, but possible. However, if Clint Atchison swept the field in that nuclear car, it would push everybody down one. A thousand, twelve hundred horse, Dwight thought uneasily. Clint was the man to make use of it. His partner, Al Stevenson, was no slouch, either. Poor Christine, indeed.

''Aw, come on,'' said Bob Yang with forced heartiness. ''We seen these hot cars come and go before. Remember Ferrarri's American Special? Or the Roadway Limited with the big Wankel? Besides, these are just the trials. They'll never let a nuke compete in the finals.''

Melanie looked uneasily from Bob to Dwight and back again. ''They let them other cars compete, didn't they?''

''Yeah, but they were like regular cars,'' said Bob.

''The Limited was a Wankel,'' said Paul Cline. ''Not the same thing.''

''How 'bout it, Dwight?'' Bob asked. ''Is a Wankel a regular type engine?''

''Yeah,'' said Melanie. ''They gonna let that nuke compete?''

''Well . . . the Wankel is considered same as a regular engine. So that don't signify. They did let the *Steam Dreamboat* compete, and it was a steamer. But it never had a chance, and everybody knew it. The only other thing I can think of was Chrysler's turbine, way back when. Before my time, but I read about it a long time ago. It had as much power as the Atomic Bomb. It broke down or something, but it had showed what it could do, so the officials ruled it off the track.''

''See!'' Bob nodded three times, firmly. ''No way that nuke's gonna be let run.''

They waved again to Christine, and drifted away from the rail to their chores, glancing up from time to time as Christine or *Fifth Freedom* went past. All were uncharacteristically silent.

Dwight started laying faded red grease rags out in rows, all scrupulously clean. He placed worn though shiny tools on them in readiness. After a while he paused and stood tapping his palm with the head of a big ratchet. Presently he looked around.

''Hey, Paul!''

''Yeah?''

''Know who won the Triple Crown last year?''

''The what?''

''Triple Crown—horse racing.''

''Hell, no. Should I?''

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You got no idea what kind of horse it was?"

"A race horse. So?"

"What kind of car won the Grand Nationals last year?"

"A Ford, of course. Jim-Bob Cohen's Stallion 450. So?"

"Did you know that whatever kind of car wins consistently in the big races—especially stocks, but even Formula One—they sell better than the competition?"

By now, Dwight had the undivided attention of the crew.

"Of course," Paul said. "People like to go with the best car. So?"

"So this. Back when everybody rode horses, it was important to them which horse won, and what kind it was. Now nobody cares but bettors and horselovers. People follow car races, though, because they all drive cars."

"And the ones who don't follow the races," said Bob Yang, catching on, "will follow the info that comes out of them—car mags, promotional stuff, consumer reports. Yeah."

"Look how many car mags there are, and how many horse mags," said Paul Cline soberly.

Dwight nodded. "Well, the nuke car is already on the streets here and there. They're sellin' 'em now. There's a what, four to five month lead time on orders even with demand low, but they're sellin' 'em. And pretty soon, when more are sold, nobody'll give a good goddamn which gasburner wins. They'll be readin' the specs on nuke cars and maybe goin' to nuke races somewhere else. When that day comes, our race tracks'll start rulin' gas cars off."

"Damn," someone said softly.

A pack of cars roared by like dinosaurs. The mechanics watched them fade into the distance.

"You mean they're gonna let that nuke run?" Melanie was despondent.

"Maybe not this year," Dwight said slowly. "Maybe not even next year. But by the year after that, for damn sure there's going to be a track somewhere in the U.S. or Europe or Japan that will."

They stood in somber silence for several minutes, digesting that bleakly. Then *Christine's Dream* thundered in, Christine's grin showing all the way.

"How's it look, guys?" she cried, as they leaped about the low machine, transformed into superspeed marionettes. They did their ballet about the car while Melanie cried, "Thirty-four seconds ahead of schedule!" Christine gave them thumbs up; Dwight slapped the car's rump, and the *Dream* roared off.

"Well, hell," Paul said fondly. "Come the revolution, we'll just git us one of them damn nukes and try again. Hey, guys?"

After the trials, they tore into the *Dream* with all their usual dedication and soon had it refitted for the race. Finished, they drifted down to *Fifth Freedom*'s pit. Other crews were already there. Clint Atchison was sitting on the barrier, his back to the track, looking proudly at his new machine. It gleamed red and yellow and looked bug-eyed and strange. The atom sign was ominous on its doors.

Dwight leaned on the barrier and looked it over from a distance. It was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a typical Formula One machine, low, sleek, with extreme lines. To the mechanic's eye it was even more extreme than usual: it had no engine. The body looked stretched and thin, though it was made of the usual crush resistant foam they were all using. The driver sat farther back than usual—ordinarily he sat just behind the front axle. Presumably, this was because the can in that thin body wasn't heavy enough for balance. The spoiler was set farther forward and had a shallower angle than usual. The front wheels were big, as big as the back wheels—which were much smaller than the huge slicks normally used on Formula Ones. But who ever heard of a four-wheel-drive Formula One?

An attractive woman in bright red coveralls was polishing it. Dwight recognized her as Al Stevenson's wife.

Then it hit him that there were no mechanics around the nuke. Nobody else seemed disposed to approach it closely, either. For that matter, where were its mechanics? There were only a couple wearing *Fifth Freedom*'s colors, and they were loafing in the shade.

Al Stevenson came out with three beers. He gave one to Clint and looked around. "Where's Murphy?"

Murphy, a vice-president of Consolidated Electric, was gone. Stevenson shrugged and tossed the third beer to Dwight, who felt honored.

"You guys ready to get wiped?" Al asked. " 'Cause here's the winning combination—Clint, me, and the *Fifth*."

"Hey, Clint," Paul Cline called brashly. "How's that Atomic Bomb handle?"

Clint lowered his beer and a grin split his dark features. "Jes' like a cat," he said. "Like a big ole tree-climbin' cat with his tail all fluffed up."

"You think they'll let you run?" Dwight asked.

"Well, that's up to Murphy and the CE reps," Clint said reasonably. "But accordin' to the revised rules of this track, nukes ain't disqualified as such. If they was to rule us off, we could claim discrimination and sue. Prob'ly less dangersome to them to let us run."

"The fans may not like it," said Christine.

"Hey, it's Christine!" Al slapped her behind and got his own slapped in return. His wife dropped her polishing rag on the nose of the car and came over, waving.

"Christine's right about the fans," said Clint, looking into his beer. "I admit that worries me. We been gettin' some mail."

Christine looked around from hugging Al's wife. "Dwight's our brain, and he says the fans won't resist it forever."

"Yeah?" Clint looked around. "Why's that, Dwight?"

Dwight almost choked. He had been drinking, and he had never been noticed by a world-class driver before. Clint was a champion. He forced himself to speak. "Well, they're selling these nukes already. They're such a good buy that people will get over their fear of 'em if nothing really bad happens. If nobody's car blows up or anything, you know."

"No way that'll happen," said Clint. "Even a wreck ain' gonna bust one of those cans open. I seen the trials where they slammed 'em into cliffs and dropped 'em from helicopters."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Right. Worst that happens'll be that somebody's can will fail, or run out of nukes." Dwight shrugged. "No worse than runnin' out of gas. So the public'll start buyin' nukes like crazy."

"They're already buyin' 'em for houses," Al Stevenson said.

"Yeah. And when everybody has a nuke, nobody'll care about gasburnin' cars. Except collectors, antique car buffs, like that."

Al scowled. "You mean my mint-new Dakotah that I finally saved up for and bought is gonna be antique in a coupla years?"

Dwight looked at him uncomfortably. "That's how it's goin'."

Clint laughed. "Here I thought I was gettin' in on a good thing. Looks like I jes' barely made it onto the bandwagon in time. Don' mean as much as I thought it would, if everybody's gonna be racin' nukes in a coupla years."

"We're still the first," Al's wife said brightly.

Dwight jerked a thumb at *Fifth Freedom*. "That thing really turn out a thousand, twelve hundred horse?"

Clint drank, pursed his lips, and looked into his beer can. "You'll have to ask Al the details. Kind of hard to say if electric's the same as gas."

"More'n twelve hundred," said Al promptly. "Output's only about seven hundred kilowatts—call it a thousand horse—but an electric motor gets a lot more use out of a horsepower than a piston engine. Those four motors between 'em only take, say, twelve hundred horse, compared to a gas engine. But if we had bigger motors, they could pull about two thousand."

There was a little silence.

"I don't believe it," said Paul, hushed.

"Al's the expert," Clint drawled softly.

"It's true," said Al. "An electric motor, 'specially those pulse-modulated motors, can pull all the time. But a gasbanger only hits a lot of real fast licks; most of the time it's not actually generatin' power. Get me? It's like two-thirds of the time the piston engine is between power strokes, but the electric motor ain't never between strokes. So it gets more power for the money."

Not even Paul Cline felt like disputing that.

Finally Christine spoke. "How's it feel to drive?"

Clint and Al grinned.

"Like a dream!" said Al.

"No gears," said Clint.

"No?"

"She's jes' got these three pedals on th' floor. Brake on th' lef', reverse accelerator in th' middle, and accelerator on th' right. How's it go, Al?"

"Stop pedal, backpedal, go pedal. Ain't no car ever made so easy to drive. Shove the can under the seat, in a stocker; you got no need for that big engine compartment gasbangers got to have. The car of the future. Well, you seen the ads. You sit right up behind the front wheels. All the rest is passengers and freight."

Christine turned to Dwight. "How d'you fight that?"

Bob Yang brought them the bad news as they were buttoning Christine into the purple car with its gold trim and dents neatly hammered out. The decision came as late as that.

"Hey, guys, they're lettin' the Atomic

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Bomb into the race! Just got it on the TV—"

"Hell!" Dwight leaned his big frame down close to the car. "Christine, you drive like a demon, hear?"

"You got it, big guy!" And she was off for the starting line.

Christine's Dream was a shoestring operation. If they made that third-place win, it would give them enough margin to go on, perhaps ultimately to Daytona. Thus the dream. Dwight knew Christine had the ability. She had an average good gang of mechanics behind her. The car itself was the weak link in the chain.

If they finished out of the money, they'd have to hang on, go back to their regular day jobs, and try to rebuild the car for a later race.

And now, they'd all likely been bumped down one.

Waves of sound mounted: engines, people, both roaring. Over the tumult, Paul yelled: "Damn them, damn that Murphy! He must've got to the Track Commission!"

"CE bought'em off!" shouted Melanie.

"Threatened to sue their back teeth loose!" Bob waved his fist.

The PA was thundering in a baritone; the voice reached a peak of excitement and the sound from the engines redoubled. The mechanics lined the rail to watch the cars go past, with Steeltop and Smoky in the inside lanes, a new driver next, and Christine fourth. *Fifth Freedom* was in the middle of the line, based on its position in the time trials.

Dwight had warned them that Clint had been holding back. It was a part of his style.

"Aw, hell, it can't be all that great!" Paul declared. "Those guys are puttin' us on, tryin' to psych us all out!"

"Yeah, we'll wipe *their* pipes," yelled Melanie.

"Ha! They ain't even got pipes to wipe—"

The cars made three circuits, then the signal tree gave them the *Go!* signal and anticipation shot to a peak throughout the stands and pits alike. Engines bellowed more loudly, reaching toward a crescendo fit to drive the participants mad with excitement.—And Dwight suddenly wondered how it would be, if all the cars were nukes and made no sound.

Why, nobody'd come to races!

Christine and the unknown new driver—the TV in the pit now identified him as one Arlo Clayton—both tromped their pedals instantly and pulled out. From the pit, Christine's mechanics had a poor view, but they saw that and saw, too, that the favorites, Smoky and Steeltop, surged out with them. Their favorable position next to the rail and a certain psychological ascendancy enabled them to pull ahead.

Stringing out into a line, the cars roared past the pit, Smoky and Steeltop battling it out for the lead. On the flanks toward the middle of the course, Christine and this Arlo Clayton were giving it everything they had.

"Clayton's like us!" Dwight bellowed. "Shoestring! Betting his wad on one shot—"

That seemed to be the case; that car was not a product of a big garage with factory backing. Clayton was one of a gang of guys, much like them, racing on sweat and dreams. Like them, they had the old choice of risking everything

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on an early lead, or going easy and hoping that some other car would blow its rod this time, and leave the race up for grabs. Christine's gang had all agreed to go for broke.

So had this Clayton's, it would seem.

Even as Dwight belatedly looked for Clint Atchison, *Fifth Freedom* made its move. Dwight could picture Clint's lazy, panther-like grin as the silent car shot ahead and to the outside. Incredibly, from the outside it stormed past all intervening competitors, whipping inward in a long curve to the middle of the track. With a startled burst of speed Steeltop cut over and blocked its rush.

Clint's taillights flared; so did Christine's and Clayton's as the nuke dropped into place ahead of them. Then Smoky and Steeltop led into the turn, drifting, their competition momentarily forgotten.

All around Dwight the gang was bellowing, waving fists, screaming *Did you see that*'s at each other. The quadruple bellow of the four leading gasburners had a hollow, desperate sound as they went into the bend, drowned by the thunder of the pack. The red and yellow flashed once, an ominous wink from the atom sign, and with a derisive wag of its tail the Atomic Bomb was gone around the curve—just behind the leaders.

The first lap had just begun. One hundred ninety-nine and a half to go.

Dwight felt as if he had been in a bad smashup and was in shock.

Melanie beat him to it. "Poor Christine."

He shook his head and they turned to the TV, but there was a wall of mechanics between them and it. Sound fell off as the last of the cars made the turn, and they heard the bellowing of the PA. It seemed an eternity before the cars negotiated the turn to their right and came toward them again.

The lineup was Smoky ahead of Steeltop by a hair, Clint next, then Clayton, and Christine battling with Hot Rock the ex-pilot for fifth, right behind Clayton.

The mechanics cursed and groaned.

"What happened?" Dwight yelled as the pack passed. But nobody could explain how Clayton had gotten by her, though some had been watching the TV.

Three more laps followed without much change in the relative positions, though the leading three, with the Atomic Bomb hanging close onto Smoky and Steeltop, crept gradually away from the rest. Steeltop finally permitted his rival to take the first position, meditating a reversal later; the wily, gray-haired oldster was not conceding anything. Christine finally got the edge on Hot Rock—a good driver—allowing Dwight and the crew to breathe easier for a space.

More laps passed, with Christine going after Clayton for fourth. He hung on doggedly. The young fellow didn't have her flair or daring, nor her remarkable reflexes. Ahead, Steeltop made a feint and was shrewdly blocked; two drivers, two cars, operating at the peak of their perfection.

And it came to Dwight that *none of this mattered*. Nobody would remember, or care. For this was the first race in which the car of the future competed, and that was what the future would remember. No matter how badly *Fifth*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Freedom lost, that was what this race would be remembered for.

Would even the winner be remembered?

Bob Yang, the driving partner, spotted it first. "Dwight! The two in the lead! They're not fighting each other! They're holdin' off Clint!"

With a sense of sick defeat, Dwight watched them for two laps. It was true. Even held back to third place, the fantastic car still dominated the race and determined its form.

That slowed the overall pace, and Clayton took a blind stab at it, pulling up alongside Clint. Clint's next try was blocked by Steeltop, but in the confusion Clayton pulled up on *Fifth Freedom*. A couple of laps later Christine, with Clayton's inadvertent help, was able to do the same thing. The pit crew went mad with delirious joy, not spoiled by Mama Millie's doing the same thing.

It seemed that they'd learned how to deal with the Atomic Bomb. Each cluster in front of him in turn held Clint off till a car could slip by; then the leader of the cluster dropped the blocking and moved ahead into the race. Hot Rock also managed to get by the red and yellow car.

For four laps Smoky and Steeltop, Clayton and Christine, battled for the first four places, while behind them Mama Millie and Hot Rock devoted themselves to blocking Clint. Steeltop had taken the lead briefly and lost it, but with Clint out of the picture he was able to devote his attention to regaining it. Christine had edged Clayton, but he wasn't discouraged, either; he came back for another round, trying to make up in the stretches what he lost in the bends to Christine's superior reflexes.

Hot Rock and Mama Millie made a problem for Clint in the Atomic Bomb. He solved it in front of Dwight and the crew, there on the long straight-away. Giving up any chance of getting by in the conventional manner, he stayed at the outside at the beginning of the straight-away. And put his foot in the bucket.

Right before their unbelieving eyes, *Fifth Freedom* duplicated its previous maneuver more dangerously, swooping past the dueling pair and pulling in to the middle of the track just before the curve. Clint braked savagely, dangerously fast for the curve, lost it and started to spin out, let off and regained it, braked again, and went into the curve drifting. He let off—Dwight led a pell-mell rush to the TV, which tracked the little car faithfully—regained traction and straightened out, then hit the brakes again, to drift far into the curve. He held on—too long, Dwight thought in agony—flirted with the wall—and was through the turn, safely ahead of Hot Rock and Mama Millie.

Dwight's whole chest ached; he had stopped breathing. "He made it!"

"Yeah," said Bob Yang reverently, a good driver looking at a great one. "Yeah."

"He made it," said Melanie soberly. "And now he's right behind Christine."

Not quite—he was behind Clayton. But it would take both of them to fend him off. Dwight again felt a constriction in his chest.

But it wasn't too bad. Clayton couldn't concentrate on the duel, so Christine's position didn't change. As for her chance

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of passing either Smoky or Steeltop, no way. The purple car was good, but not that good; it'd never hold up. Christine was sensible; she knew that. Unlike many drivers, she had a feel for the machine.

Hope was palpable in the pit. For there was Christine, in the position she should be in—third place. If only she could hold it!

And there was Clint right behind her.

The day wore on. For a long time, there was little change. Smoky and Steeltop continued to duel; the wily veteran and the brash, lightning-nerved newcomer fought all over the track. Lap after lap went by. It rained a trifle and they went on amber till the track dried.

Christine chose a favorable moment to pull in for her first mandated stop, and none too soon for Dwight's peace of mind. The purple car had definite limits, and while he'd agreed that their best chance was to go for broke, Christine had made a long opening for the race. They leaped madly about the small noisy machine, changed tires, fuel tanks, checked and topped up with oil, pulled a plug, decided not to replace it.

They wiped Christine's face with a wet cloth and gave her a cola. Then she thundered out with renewed confidence, having decided to go on longer before trading off with Bob.

The impasse held for a while after that, but Clint was a world-class driver and not to be denied. He began to use the incredible reserve power of *Fifth Freedom* on the straights and its precision handling qualities in the bends. The three leaders dropped their intermittent dueling to block him, sashaying across the track. And with the four of them concentrated into one block, Clayton took a desperate chance and got by. For a moment it looked like he'd try to pass them all, and crash the wall, but at last he got sense and braked, dropping in beside Christine, who was side by side with Clint.

They maneuvered for another lap, no one gaining advantage. Then it happened. It was on the backstretch and Dwight saw nothing until the replay.

Clint had again come up fast on the outside and Steeltop cut a little too sharply to prevent his thrust. Perhaps he hit an oil spot. His amazing luck deserted him all at once; he spun out and hit the barrier.

Dwight neither heard nor felt the impact, as it was drowned by the thunder of engines, but all the lights around the track went instantly to amber. People were screaming in front of the TV set, and Dwight bulled into the group just in time to see the purple and gold of *Christine's Dream* rocket past a crumpled wreck against the wall. Sirens howled. At least it wasn't Christine—

Steeltop survived; they saw him wave an arm as he was helped into an ambulance, scorning the gurney. The announcer declared that his injuries were not serious. But the gang solemnly agreed that it might well be his last race, at his age.

Christine came in, shocked, and traded with Bob Yang during the freeze. She walked around stiffly, face pale, too nauseated to drink pop or even beer.

"He cut it too fine!" she said to no one in particular, pacing, pacing. "He cut it too fine! That damn nuke has the edge, and he cut it too fine!"

The lights were amber for several laps

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

until they cleaned up the mess; a number of drivers traded off. Smoky's alternate roared out, and the pattern was: Smoky's alternate, a bald fortyish fellow called "Red" Pfister, *Christine's Dream*, Al Stevenson in *Fifth Freedom*, Mama Millie, Hot Rock's alternate—that car had engine problems, Dwight's ear told him—and Arlo Clayton. The announcer had him going back in, to Dwight's surprise. So some of that good if desperate driving had been done by this Carrington. After them, the rest of the pack.

With the Atomic Bomb now in second place, it seemed insane of Clint to give up his wheel, but the race had gone on for hours. Dwight's big body was exhausted just from standing and watching. Clint's skills would be needed at the end—even seizing the lead now might not be permanent. He had to be in the lead at the finish to win. So it made sense to give it to Al Stevenson now.

Red Pfister knew what to do, and so did Bob Yang and the other alternates. They blocked Al ahead and on the side and encouraged other cars to come up. By itself, *Fifth Freedom* could not block the track, and one by one Mama Millie's alternate and Arlo Clayton filtered past him. Al drove with a cool self-control that rather surprised Dwight in this circumstance; maybe Clint was on the warhorn to him, talking like a rider to a furious horse. Hot Rock's alternate refused to go in for a pit stop; he even tried to follow Clayton past Clint, but neither he nor his car was capable of getting past *Fifth Freedom*. Still, he hung on, blowing smoke.

Dwight and the crew tried to shout a conversation to each other, but by now the pack was strung out so much that the thunder was continuous. They were solemn; they had never heard of a race in which the drivers had so obviously and deliberately combined to block a single enemy.

Now, with other cars to help block, Red Pfister, Clayton, and Bob Yang began to draw away from the Atomic Bomb. Al held his own against the pack, but could not get past the blockers. Still, time was on his side. Car after car took pit stops and roared back in; the race hung balanced for hours during the hot, cloudless afternoon. Hot Rock's stubborn alternate finally took his car in for a repair stop; it came back sounding a little better and no longer blowing so much smoke, but Dwight was not fooled. That car wasn't going to make it through the race.

Coming down toward the wire, the first teams were going back out; car after car was signaled in for a change of drivers. Christine restrained her impatience, waiting until the last mandated fuel stop to replace an exhausted Bob. So she was standing beside Dwight when Al Stevenson had his chance.

It was not Hot Rock's failing car that went, but, unexpectedly, Mama Millie's. It suddenly lost power—they only saw it on TV and did not hear it, so Dwight didn't know what had happened—and Al Stevenson surged past her.

Bob Yang moved over to block, but couldn't cover the entire track, and that bastard Clayton didn't help. He pulled ahead, and Red Pfister, Smoky's alternate, moved to keep the inside. That left *Christine's Dream* in third place—but not for long. Al pulled alongside. Bob

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

knew what to do and grimly kept the inside, so that the three cars blocked Al.

Mama Millie had lost her transmission. The lights were amber for three-quarters of a lap while they towed her away, then Hot Rock, back behind his wheel, tried to come up inside Bob. Bob ignored him, and it didn't work. Then he tried to come up outside Al Stevenson. Al was no Clint Atchison, but that didn't work, either. That car was just too weak. Still, Hot Rock hung on, on a hope, ready to gamble everything on one last roll.

Clint called Al in, and Christine scrambled to change over, too. Bob, when he had climbed out of the tiny Formula One machine, was furious at Clayton.

"I can't believe it! We had a shot at second place! I don't know how long we could've held it, but we had a shot at it! But everybody has to help keep that damn nuke out of the race, and Clayton took advantage!" He went off into a description of Clayton's ancestors and probable descendants.

"Christine will hold him back," Dwight said doubtfully.

"Yes, and she'll teach that damn Clayton a thing or two!" Paul Cline said.

Melanie looked from one of them to the other, looked out at the race, and shook her head. She sat down with her back to the barrier, but couldn't stand not knowing, and soon jumped up to peer over.

Now it was Smoky, Clayton, Christine and Clint dancing around about each other, and then Hot Rock. Smoky and Clayton exchanged the lead, Smoky coming out of each bend ahead, Clayton gunning it on the straights to catch up and pass. That was no game to play against Smoky and his stable full of top-rated mechanics—not with a tiring car. If the race was long enough, Clayton's machine would die on the track.

Christine's Dream was tired also. Even Smoky's machine had a rough sound to it, and was blowing a little smoke. Hot Rock's engine was audibly overheated, going into fibrillation. He labored on, shifting carefully, staying out of the lower gears as much as possible.

Fifth Freedom was not noticeably changed.

On one occasion when Clayton was behind Smoky, Christine thundered up beside him, oblivious of damage to her engine. Instead of battling for third place, she was battling for second. Hot Rock took the next opportunity to come up beside Clint, who waved jauntily. Two more laps, and then Dwight was grinning and pounding Melanie on the back: Clayton's engine was missing raggedly and backfiring.

"Timing chain!" Dwight bellowed, and they understood.

Clayton drifted to the side, finished, but made it to his own pit, dying with dignity. Christine's crew cheered his misfortune as he passed.

When Dwight looked again for *Christine's Dream*, he saw her engaged in a furious battle for second place with Hot Rock, who had slipped or been allowed past the Atomic Bomb.

But not for long: with the race closing down to the final laps, the blockers had become intent on their own placing, and Clint made his move. Too late they

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

awoke: Clint was threading through them like a needle through cloth.

Belatedly they attempted to hold him—and abruptly Smoky had won. Clint was next, whipping past Smoky's tired car when past the finish line, but courteously slowing and allowing him to precede on the victory lap. Christine and Hot Rock were in a photo finish for third. Hot Rock's engine seized up when he let off just after roaring through the light beam; Christine swung in behind Clint.

Dwight leaped for the TV, accidentally shouldering Paul aside and tripping over Melanie. The two other remaining cars followed. It was all over, and the cars that roared past behind them as they stared, agonized, at the TV, were slowing down, their vast volume of sound and emotion declining like a phonograph record shut off in mid-spin.

The announcement was delayed for an agonizing eternity while the judges studied the electronic record: Hot Rock third, *Christine's Dream* fourth.

Murphy was furious. The TV camera caught the vice-president of Consolidated Electric in the lobby of the hotel, denouncing race drivers. "Conspiracy! A criminal conspiracy on the part of virtually every driver on that track! I'm not talking here about civil suits—that was a criminal act!"

"Given the value of first prize money, Mr. Murphy would seem to have some basis for his statement," remarked the studio commentator.

That was a network broadcast, Dwight noticed. The Atomic Bomb's race was big news.

"How about it, Dwight?" Melanie asked uneasily. "Can he really get Christine busted?"

"I don't think so," said Dwight slowly. "There's no law against blocking another driver's attempt to pass. It's done all the time. They'd have to prove that the drivers got together and agreed to go after Clint and Al. Since they didn't, they can't prove it."

"There was that mechanic in Mama Millie's crew," said Paul Cline, subdued.

"Yeah, but that was after he'd seen what they were doing. Besides, one mechanic sayin', 'Let's go get the bastard' to his own driver ain't the same as everybody gettin' together to agree to it."

"They got him on tape."

"Sure, they recorded all pit-to-car radio, and what did they get? One ratchet-jaw mouthin' off. Anyway, they can't get Christine that way; we never told her nothin' to do." Unlike some drivers, she did not need to be told when to come in; she could read the sensors herself.

They were relieved, but Christine was subdued, "What about a civil suit?"

"Sue for what?" Bob Yang said harshly. He had just hung up on a bitter call to his wife. "We don't even have a car anymore."

Christine's Dream was dead. They'd have to begin again this winter, after hours at their regular jobs, reboring and rebuilding a new engine. In the short term, though, they were out of it. Maybe next year . . .

"If Murphy and CE sue anyone, it'll be the track, I should think," said Dwight.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Big deal," Paul said sourly. "So let'em fight it out."

"Melanie, honey, would you get me a beer?" Christine's weariness sounded in her voice.

It was hot in the small trailer. The air-conditioner could not handle the load of people plus the day's accumulation of solar heat. Dwight went to sit on the step, looking blankly off across the track. Here in the lot it was quiet. The losers were here. The winners were in hotels; they could afford it. They had rich sponsors. Mama Millie drifted by and looked at him emptily. She, too, had come close, so very close.

Dwight saw that she was a much smaller woman than he had thought. Her bust and square jaw made her seem imposing in the pix. Now she seemed small in defeat.

"Whatta day," she said.

"Yeah. Want some beer?" He didn't want to get up to get it, though.

"No, I'm sloshing with coffee—hey, what's that?"

"Be damn. Camera crew, comin' down to look at the losers, I guess."

"Let me tell my guys." Millie departed at a trot and Dwight stuck his head into the trailer.

"Hey, TV comin' in for interviews! Christine, fluff up and look pretty!"

Perking up, they came boiling out, straightening clothes, grooming hair, fingering chins. Quite a little mob of dispirited mechanics and drivers converged on the camera crew. It broke the lost-race let-down. Dwight was quite excited.

It turned out that the news crew had only one topic on their minds. "What do you think of *Fifth Freedom*?"

They didn't think much of it, and said so.

"Do you believe there was a conspiracy engaged in by the other drivers?"

"I'm one of those drivers!" A tousled, dirty-blond young man pushed through, wearing an angry expression and a jacket that said ARLO across the back. "I'm one of those drivers, and nobody told me who to block! I decided for myself! Nukes ain't fair, and shouldn't be allowed to compete! So I blocked him!"

"Right, right!" the crowd yelled.

"So you deny Mr. Murphy's conspiracy theory?"

"Damn right!"

"As you are aware, there is a question as to whether the Track Commission should or should not disqualify *Fifth Freedom*. What is your opinion?"

Christine's gang looked at each other. That hadn't occurred to them. Hope went like a flame through Dwight. If the Atomic Bomb were disqualified, its second-place win would go to Hot Rock—and third-place to Christine. They'd still have to rebuild, would miss some races—but they wouldn't be out of it more than a couple of months. And they'd have a show to their name, finally out of the pack.

"Yeah, yeah!" Paul Cline was saying.

Bob Yang yelled, "This is a gasoline track!"

Shouts rose up all around. "Down with all nukes!" "Ban the Bomb!" "Ban the Bomb!" "We don't want no damn atoms around here!" "Yeah, no nukes on this track!" "No nukes is good

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nukes!'' ''Ban the Bomb! Ban the Bomb!''

The news crew made an effort to continue the questioning, but the crowd was completely out of hand. Dwight found himself shouting and waving his fist with the rest of them, hope hammering in his breast.

After several minutes of this, the camera was trundled away, and the crowd dispersed. He found Millie beside him—he ran into her, in fact, she was so short.

''Sorry!'' He'd been looking up at the camera.

'' 'Sokay. Boy, I hope the Track Commission does disqualify them.'' Millie caught his arm. ''Christine'll get third if they do. Couldn't happen to a better driver.''

''Yeah, she's really good. The rest of us are a pretty average bunch of guys, but she's got potential. Put a good car under her—''

''Hey, Dwight,'' said Christine. ''Paul and Melanie are going on a beer run.'' She glanced curiously at Millie, then at Millie's hand on his arm. ''I'm going to stretch out under the air-conditioner.''

''Right. Tell the gang I'll be around, if anything needs to be done.''

''Shouldn't be. That's about it for tonight.'' She left.

''I'll say it is,'' he said bitterly to Millie. ''We got *Christine's Dream* loaded. Nothing to do to a car you're going to strip down anyway.''

''I saw her blowin' smoke. Sounded pretty bad. Rings? Going to rebore her?''

''No, we're gonna scrap that engine. I don't trust the rockers, and from the sound, I think the rods are knockin' a little. Not enough to notice now, but . . . ''

They strolled around the lot for a while, exchanging occasional greetings with people they knew, getting acquainted. As the light faded, Dwight grew thoughtful, and gloomy, rather to Millie's distress.

''What's wrong, Dwight? Losing the race?''

''More than that, Millie. I think we just lost every race to come.''

''That's comin' it pretty strong.'' She looked upset, more at his distress than because she believed him.

''Look, how did you get your start?''

Surprised, she said, ''Well, I had some money saved up, and when I divorced my old man I got his old racer. Didn't amount to much, but—''

''Not what I meant. You were a mechanic—I know that much about you. How'd you get started?''

She blinked at him. ''Well, we had a small engines course in high school. I already knew more than they could teach me, though. I pumped gas, cleaned windows, helped my father and my two brothers. I like grew up with cars.''

''Me too,'' said Dwight. ''I got my start in a filling station, pumpin' gas, checkin' the oil, cleanin' the windshield. And doin' a little work on cars with someone showin' me how. Tires, at first. And I bought my first junker and fixed it up, first car I ever owned. Taught me more than any school could've done. Taught me to hear. Taught me not to be afraid to get my hands dirty.''

She laughed, ruefully. ''My boys were sayin' the mechanics on the nuke

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

car have it soft. They don't get their hands dirty."

"What mechanics?" he asked. "Millie, they don't have but a couple or three—don't need'em. What's there to fix in a nuke?"

"I don't know. The can?"

"No, that's done at the factory. All there is, is four motors and their wheel bearings, a couple of relays and some switches. A battery to start it. That's what I meant about losin' the future races. I guess we could all make it without racin'. But if we couldn't be mechanics?"

She stared at him. "Oh, come on, the nukes'll need mechanics. They're not *perfect*."

"Yeah, but they won't require one in ten of the mechanics already workin'. Millie, how's the next generation of mechanics going to get started if there are no filling stations and only a few garages?"

"Freeways," she said after a moment. "People travelin'—and big trucks."

"Yeah, I thought of all that. Tow trucks on the prowl, and men fixin' wrecked cars, bangin' out dents. Still, there's not goin' to be as many as now."

"How about if you have to take a leak?" she said challengingly. "Or tires—they'll wear out just as fast."

"Oh yeah. They'll have to set up pay toilets. And they'll have to charge for air, to get by. Set up coin machines, at the few garages that survive. How much oil they goin' to sell at two bucks a quart, when cars use four spoonfuls in a lifetime? And transmission fluid, radiator coolant—" He shook his head, contemplated the lot full of gasburning cars and trucks.

Millie was silent for a long time while Dwight stood despondently by. Then she turned to him and put her hands on his chest. "That's a thing we can worry about some other time. Right now let's find some quiet place where we can sit down and be alone."

There weren't many, unpreempted. As they were crossing the lot, someone waved to them and came running over.

"Hey, you two! A lotta guys are gathering over at the hotel! They're loadin' the Atomic Bomb—"

"So what?" said Millie, with frustrated irritation.

"They're lettin' Murphy and Consolidated Electric and everybody know just how they feel!" He dashed off.

People all over the lot were running back and forth. Dwight felt that things were happening. "Shall we go see?" he asked.

Millie nodded, seeming to share the feeling—one of not wanting to be left out. "I wouldn't mind telling that damn Murphy a thing or two—and I hope the Track Commission hears about it!"

Clint Atchison had an indescribably sad expression on his face. He stood back against the wall under the hotel entry. Porters and mechanics were carrying bags down to load them into the truck that held *Fifth Freedom* clutched to its back. Murphy was speaking, more calmly now, to the TV cameras, but gangs of men and women in team coveralls had gathered in the drive. More were coming in from all over the parking lot in front of the hotel. They yelled derisively at Murphy; some shook fists.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He made the mistake of shouting back, his voice rising in pitch and his face getting red. The TV camera swung, and the guys redoubled their outcry. Dwight and Paul and the rest of the gang joined in.

"No nukes! No nukes!" "Ban the Bomb! Ban the Bomb! Ban the Bomb!"

Little groups had their own chant; others yelled incoherently and profanely. They surged forward, swayed back, grouped, advanced, stood alone irresolutely. Dwight and the rest of Christine's gang paused back out of camera view, uncertain. Millie and her crew were coming up behind them.

Clint Atchison kept sadly out of it, but Al Stevenson answered back, gave one raucous woman the finger, and turned to yell encouragement at Murphy.

"Says they had us all beat clean," said an angry man in a black coverall. "What a turbo-charged motor-mouth!"

Angered by Murphy and Al, men climbed up on the bed of the truck and kicked at the nuclear car, pointing with down-stabbing fingers and shouting at the cameras. The man behind the wheel glanced back uneasily.

"Any time you want to try again, smartmouth!" one yelled at Al.

"See you at Daytona—if you make it!" Al came back swiftly.

Belatedly, Murphy realized that things had gone too far. He seized Al's arm; Al shook him off and turned to yell at Clint. Clint shook his head, not changing his attitude. Al took two steps toward the truck and bellowed abuse, his reddened eyes sweeping over the men and women around him, passing unseeing over Christine's gang farther out. He gave the crowd the finger again and twisted back toward the truck to tell them where they could put their prizes.

"Gasbanger prizes!" he rasped. "Don't mean a thing anymore!"

"A race is a race," said Dwight angrily, and they surged toward the back of the truck. It was Bob Yang who reached up to catch his arm. Bob tilted his head, looked at Dwight significantly: sirens.

Goaded to a fury, the men on the truck were ripping the plastic wrap off the bright red and yellow car. Its CE symbol and the atom glittered a wicked blue as they tore at the restraints. Alarmed, Al tried to climb up but was pushed back. Murphy disappeared into the hotel. Some official appeared in the doorway and looked the mob over, but decided not to interfere.

"Hell with 'em," shouted Paul, meaning the sirens. The crowd closed around the tail of the truck, blocking Al's approach.

Al Stevenson was incoherent with fury; he assaulted them indiscriminately. As the others dodged or drew back, Dwight found himself in the fore. A big man can afford to be calm; he did not hit the driver, merely stood blocking Al's blows and his advance. Behind him men tore *Fifth Freedom* loose from the truck, kicking and pounding it.

"Stand clear!" they cried, and the Atomic Bomb dropped tail first to smash into the pavement. Al sobbed aloud.

Even tipped up at that angle, even battered, the nuke was a breath of speed and the future, proud if sad. Dwight glanced back for a moment and caught his breath; it was a Formula One taken to the sleek ultimate.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Al nearly went berserk and Dwight flung him away—was afraid the smaller man was going to get himself hurt. The mob was thoroughly roused. Men descended on the hapless nuke and battered ugliness into it. Its crush-resistant foam was not designed for this kind of treatment. The men above heaved on its toothless prow to slide it off the bed. Dwight heard a voice and looked around.

The driver of the truck was leaning out to shout at Clint, who shook his head, maintaining his position. The champion had put one hand on the shoulder of Al, who stood hunched, sobbing in fury. Murphy had reappeared and was speaking quietly and angrily to reporters.

The TV camera was focused on the fury of the men and women around the nuclear car.

Dwight had looked at the overall scene, and now he stood back appalled. After a moment, he realized that Melanie was among the mob. He plunged in and drew her out by her collar. He did not attempt to answer when she cried out and struck at him. Bob was expostulating with a larger man. Bob was the sort who carried a heavy hammer in a leg pocket in dubious neighborhoods. The other man had snatched it away and was working his way through the press.

Then men arrived with coffee cans of gasoline.

"We'll show'em what gas is good for!" one cried. They threw it over the car, splashing those near it as well.

The mob cheered and backed away. Dwight caught his breath. He flung Melanie away and leaped forward, hurling both Bob and his opponent aside. A dozen hands sprouted tiny flames, reaching toward the doomed car.

"*Stop it!*" he roared. "*The truck's not nuclear!*—"

Flames leaped up, seeming at first to hit the overhead; men and women leaped away. Dwight flung a couple of them back and beat at the flames on one guy's shoulder. Then he looked up, horrified.

The Atomic Bomb was one long finger of flame, its front wheels still on the truck. Men were leaping blindly off the bed.

Then the driver of the truck did one of the most courageous things Dwight had ever seen. He should have leaped for safety. Instead, he put his big machine in gear and eased in on the clutch.

The trailing vehicle had had superficial damage only; it trundled along, dripping flame. As soon as he was well out from under the canopy, the driver braked, clutched, gunned the engine—and popped the clutch.

Fifth Freedom fell off and lay quietly dying by itself, safely away from the hotel, though a little too close to several cars. But now the truck had a fire on its bed. Seeing that, the driver slowed, looked around indecisively—then cut his wheels and bailed out. The truck climbed the curb, went into gravel, and bulled low speed into a lamp post. It sat there, stalled, its bed quietly burning just over the fuel tank, until a mechanic leaped forward. He snatched open a door, jerked out the fire extinguisher, and put out the flames.

Nobody made a move to put out *Fifth Freedom*. They watched it burn, wordlessly, for a while. Then Dwight gathered up the gang by eye, and turned to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

go. There was nothing more to do—or see—or say.

Then he saw that the driveways were full of Christmas trees; and dark-uniformed men surrounded them all.

Clint still leaned against the wall, sadly. Murphy was angry but not triumphant. Al no longer cared. He had eyes only for the burning car.

The burning of *Fifth Freedom* dealt *Christine's Dream* its deathblow, though they didn't realize it then. At the time they were more concerned with possible jail sentences. By a fluke, though, Christine's gang came out well. The TV camera had not seen most of them, nor had it observed Dwight blocking Al from the truck. But it had caught both his leap for the fire-wielders and his cry of warning.

While he was not built up into a hero, the court seemed disposed to view him as evidence that the mob did not come there with malice aforethought. It dealt gently with them all. Demonstrably, not all had been guilty of arson or even vandalism. Besides, they were all from out of town, and would soon disperse.

Perhaps, too, the judge reflected on how much revenue the race brought in, and had his own doubts about nuclear power.

They were let off with suspended sentences. The Track Commission, too, was at first conciliatory. The racing world, it seemed, had made its feelings known. There was talk that it would disqualify *Fifth Freedom*.

It was a time of hope for Dwight and the gang. They tore into the building of a new engine for *Christine's Dream* with renewed zest. "And wait'll that third-place prize money comes in!" they would tell each other.

But it never came. With the racers out of town, further mob action became unlikely. Perhaps the Commission didn't like to be pushed around. Perhaps it was bought off, as Christine and her crew devoutly believed, or merely bullied into it. Whatever the reason, it did not disqualify the nuke. And Christine was just another loser.

Dwight sat slumped over the block of what would some day become the engine of a new *Dream*. "It's like I said at the time," he said glumly. "Doesn't matter who won the race. Nobody's gonna remember that. All they'll remember is, that's the first race the nuke ran in, and that all the gasburners tried to disqualify it."

"Hell, Dwight, it ain't the end of the world," Bob Yang argued. "There's this petition to the various tracks to get 'em to rule out nukes. Daytona's thinkin' about it now. And NASCAR is considering ruling'em off all officially sanctioned NASCAR events."

"Even if they do it, which I doubt," said Dwight moodily, "it won't matter. The history is all against it. Know how NASCAR got started? Bunch of kids meetin' illegally in back streets to race their machines. 'Cause they didn't have any legal sanction. Next thing you know, there'd be a National Association of Nuke Car Racers to sanction *its* own events, and NASCAR'll be forgotten."

"You don't understand, Dwight," said Paul Cline, picking up a cylinder hone and adjusting it. "Detroit's against it, too."

"So what?" said Dwight. "Detroit's got a big investment in gasburners. Cost

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

billions to convert. Gotta scrap all their old plant. But they got a choice: go nuke or go under. You think the Japanese are gonna stand still just because we are?"

Paul considered that, troubled, the hone in his hands. Then he shook his head, plunged it into the block, and turned it on. Over the resulting scream, he shouted, "Never catch me in one of them things, anyway!"

That, Dwight agreed with. Not long after this he had to go shopping for a car. And this was the time to buy gasburners. The signs at a used car lot proclaimed the end of an era: "50% OFF! ALL CARS, 50% OFF! FINANCING! 50% OFF!"

Not only were prices of cars incredibly low, but fuel had fallen to three-quarters what it had been, though a mere handful of nukes had hit the streets. But the household can had already cut heavily into the market. Fortunes were being lost in the oil industry; coal was a drug on the market; a Texas millionaire had dived headfirst off a drilling rig. . . .

The new car lot was across the street, same dealer as the other. There were a number of new gasoline cars there, at only twenty-five percent off. Those prices were bound to fall. In the front show window was a nuke.

Dwight crossed over slowly and stood looking at it for a long time. It did not look much like the Formula One *Fifth Freedom*. It was the subdued rich brown with deep hints of gold glint that was so popular now, and the bronze trim was modest. Of course there was no grille. The headlights were out in the open. There was no hood, no engine compartment. The coach was pushed up till the front wheels took bites out of the front doors. The can was between the front wheels, in front of what used to be the firewall. Behind the coach, the trunk was half again as long as usual and had gull-wing doors in front of the regular deck lid, just behind the back window. The atom sign was small and modest on the nose and tail, just above the license-plate holders. It looked low and sleek and fast, with that tear-drop shape. . . .

Futuristic.

The price was high. Far too high for a loser. But you didn't have to buy fuel—even cheap fuel—or oil, or do any work on it, hardly.

The time was ripe to buy a gas car. And the guys'd kill him if he double-crossed them now.

Yet, in his mind's eye, Dwight could see Clint putting his foot in the bucket, could see the sweet silent surge of power that took *Fifth Freedom* past the quarreling pack on a long sweeping trajectory into the lead, into the future.

Outside the building, the gasbangers all looked quaint.

Dwight went inside. . . .

just to check out the financing. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Probability Zero

WHAT'S A NICE GIRL LIKE YOU . . .

Jerry Oltion

Today's science fiction is tomorrow's science fact—and, sometimes, vice versa.

You could tell the medicinal drinkers by the hollow, worried look in their eyes. It didn't matter if they were the pushing-forty professional type in their suits and ties, joggers in sweats, or yuppies in their Reeboks and Code Bleus and Patagonias—all of them had that same look. Night after night Bill Butler sat at the end of the bar and watched them come and go, and that was his observation: all of them looked worried.

And none of them drove home.

It was becoming quite a phenomenon. One of them, a pretty young lady the likes of whom hadn't spoken to Bill in twenty years, had tried to explain it to him once while she concentrated on downing her fifth Harvey Wallbanger in less than an hour. Her voice had been slurred and too soft for an old drunk to hear clearly, but Bill had listened, rapt, while she told him of cholesterol in the blood and of high-density and low-density lipids and which ones were currently popular among the medical community. Some of them were good

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

for you and some weren't, but Bill couldn't remember which it was, only that alcohol helped remove the bad ones from your system.

It might be different by now anyway. The doctors kept changing their minds. That much Bill remembered well. The girl had spoken with great venom on that point, holding her glass up in mock toast as she said, "Right now it's alcohol," then draining it and pressing her finger to her nose in a silly test of sobriety.

"What do you think?" she had asked. " 'Mi drunk enough?"

No, Bill had thought sadly. *Not nearly enough*. It had been a long time since anyone had been for him. But that wasn't what this young beauty had meant anyway.

"You try it," she had said, leaning forward so he could touch her on the nose.

Her skin had been soft and warm under his shaking index finger. She'd smiled a perfect smile and shook her head. "Nope. Still felt it. Barkeep! Another one over here. And another for my friend here, too."

So he'd drank with her and listened to her story until she slipped off her stool, and he'd had quite a good time helping her up again, though he'd forgotten how heavy even a slender woman could be when unconscious. The drunk wagon had come by a few minutes later and taken her and a dozen or so others in her state home again, and though Bill had been there every night since then she hadn't returned.

He'd have been there anyway. It was habit by now.

He drank too much. He knew that even before she had told him so, though her clinical analysis of it had made him stop and think about it a while. Too much and you're courting liver damage, she had said, while not enough would leave you with one or another of those lipids still in your bloodstream, clogging up your arteries like scale in a pipe. It was like walking a knife edge, and the doctors kept shifting the knife on you, telling you first that you shouldn't have any alcohol at all, then that a drink or two now and then was okay but not to overdo it, then deciding that a good, stinking drunk once or twice a month might just purge out even the stubborn stuff.

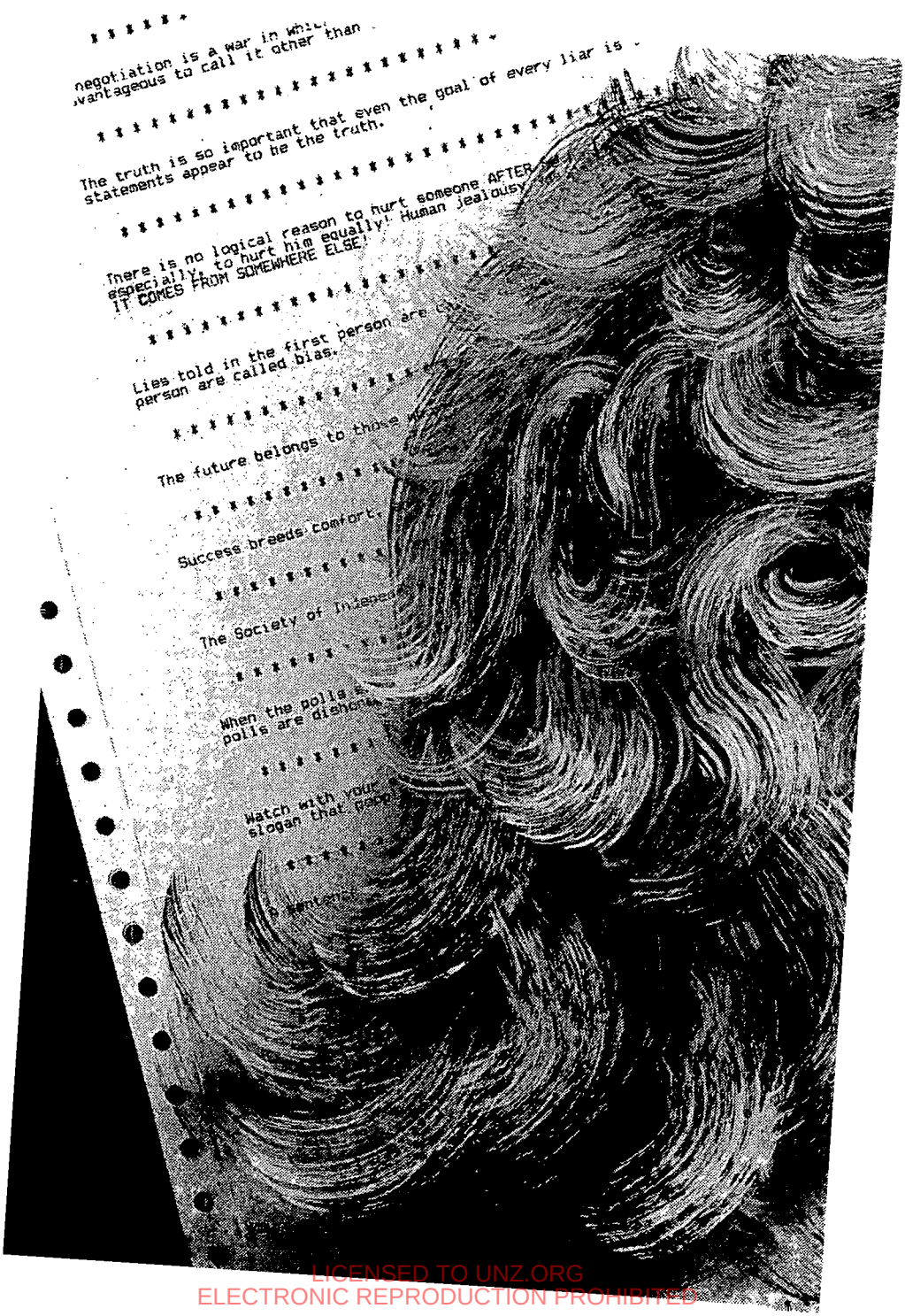
Bill didn't know what to make of it, and neither did the girl, nor did the rest of the health-conscious crowd that filled the bar every night.

But they kept coming, because the doctors might be right this time, and because nobody liked getting smashed alone.

Another pretty one came in and surveyed the bar. Nervous, new to this latest health fad. She saw the one free seat beside Bill and hesitated, then straightened her shoulders and came on over.

He smiled. "Don't worry," he told her as she sat down. "You're in the company of a professional." ■

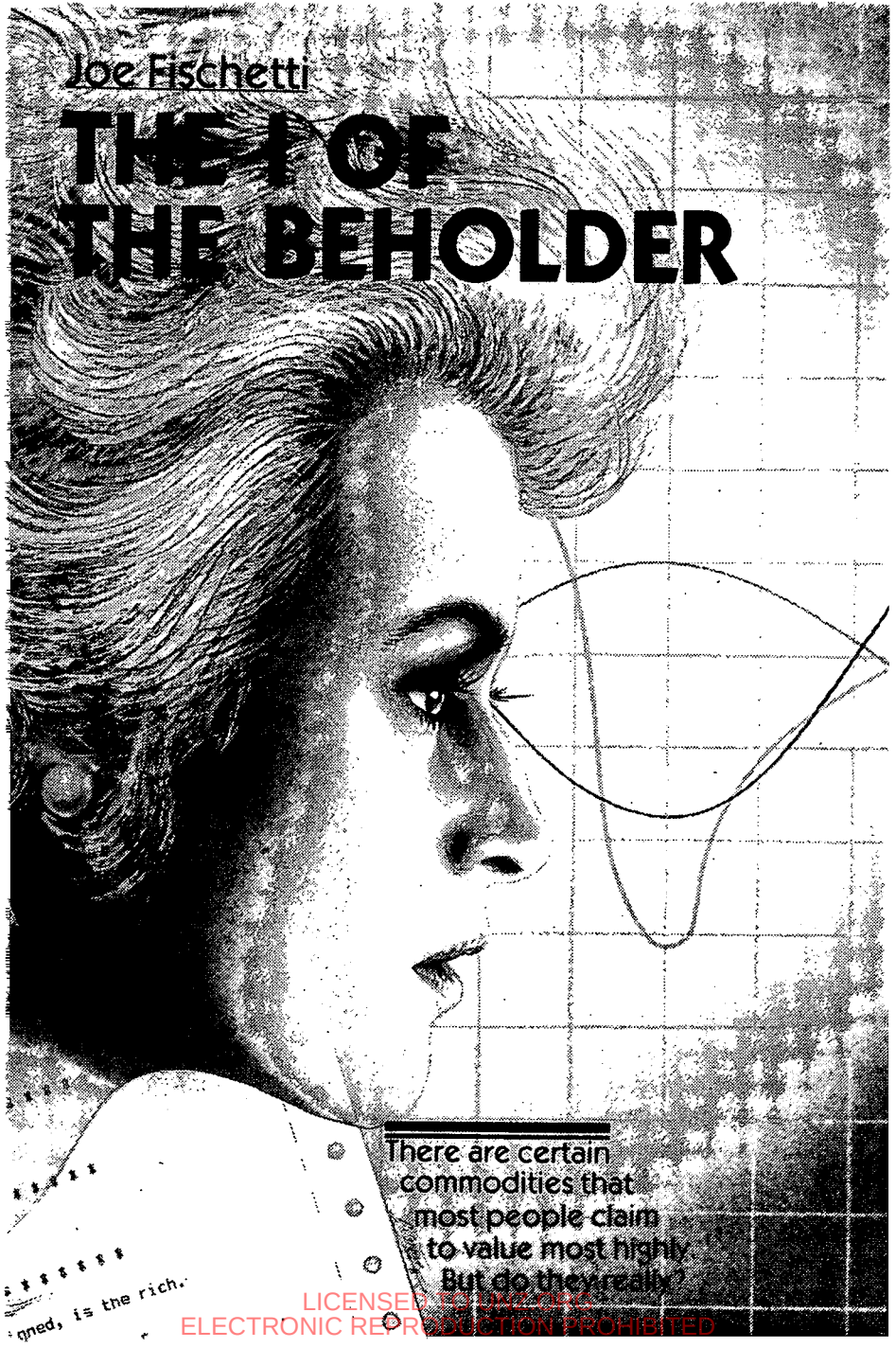
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


negotiation is a war in whic
vantageous to call it other than
The truth is so important that even the goal of every liar is
statements appear to be the truth.
There is no logical reason to hurt someone AFTER
especially to hurt him equally! Human jealousy
IT COMES FROM SOMEWHERE ELSE!
Lies told in the first person are
person are called bias.
The future belongs to those
Success breeds comfort.
The Society of Indepen
When the polls
polls are dishon
Watch with your
slogan that peop
A sentim

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Joe Fischetti

THE I OF THE BEHOLDER



There are certain commodities that most people claim to value most highly. But do they really?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"What's it doing?"

"I don't know. I loaded up Big Mama with everything in my library—then told STUBIAC to print out 'original true statements.' The program did nothing, so I gave it a non-zero tolerance . . . figuring so many books must have lots of contradictions . . . now look at 'er go."

Ace Howler peered over Jim Bonewitz's shoulder. The statements were coming up on the screen, one quick line after another, while a printer alongside simultaneously produced the hardcopy.

STUBIAC was the hybrid computer, utilizing combined silico-electronic and bioelectronic guts; Big Mama was the attached MAMMY—Mammoth Associational MeMorY. It was said that nobody really understood how a MAMMY worked; they were modeled after what had been learned about the brain using the new molecular infoprobe technology.

All evolution theories concur that the least advanced forms of life must exist in the greatest abundance—uncountable trillions, for Earth's bacteria—with higher forms being scarcer and scarcer, until "man" is reached, numbering only in the billions. Simple extension of the principle reveals that there must be a handful of humans who are as advanced beyond most of those billions as those billions are beyond, say, a typical rodent.

"Jesus," Howler said. "That's *good*."

"It's been doing this all day!" Bonewitz exclaimed excitedly. "It doesn't even pause!"

A negotiation is a war in which the parties have mutually agreed it is advantageous to call it other than a war.

The truth is so important that even the goal of every liar is to make his statements appear to be the truth.

There is no logical reason to hurt someone after *he has hurt you—most especially, to hurt him equally! Human jealousy was not a step in evolution. IT COMES FROM SOMEWHERE ELSE.*

The unemployed athlete-aspirant brushed his sand colored top. "How come no one else has ever got a Stube model to do this? I know these memories have only been around for about a year, but . . ."

"Got to rub the lamp to get the Genie, I guess," said Bonewitz.

A little knowledge is a dangerous thing. Any less can kill you.

The taller fellow straightened. "We could make a million dollars with this thing!"

Bonewitz cleared his throat. "Uhh, you may note that my copyright notice is on each page, here?"

Howler went over and unfolded a few pages from the neat stack accumulating behind the printer. Every sixty-sixth line contained a small "c" with a circle around it, followed by the date, and "James Maxwell Bonewitz."

"Well . . . *you* could make a million

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

dollars," Howler revised. "I'll be your agent."

"*Now* you may be talking."

Lies told in the first person are called dishonesty. Lies told in the third person are called bias.

"Jesus."

"If I put in a Bible and a Koran and stuff, I'd probably get some of those, too."

Howler looked down at him questioningly.

"Religious sayings," Jim Bonewitz clarified.

Howler put a hand to his chin. "I got a friend who knows a publisher . . . says the guy's lookin' for wacky fad-type stuff, feels he makes more changing with the fashion from year to year than he would by following a single line. I'm gonna talk to him."

"You tell him how I did it, I'll kill you."

"I tell him how you did it, I'll kill *myself*."

The future belongs to those who pair for it.

Howler laughed, then said, "That's us. We're gonna *own* the future."

"Till somebody else gets the idea," the programmer said reflectively.

"That's why we gotta act fast. Gimme one of those sheets—any one. I'll give it back to you tomorrow."

Bonewitz looked at him dubiously, but tore off the top page and handed it to him.

Howler's friend's publisher acquaintance wasn't interested, but *he* knew someone who . . .

Campus Scene Progressive Cooperative offered them a whopping five hundred dollars in advance, plus a seven percent royalty.

Howler told them to shove it.

So Bonewitz and Howler pooled their lives' savings (they had a big argument over what the plural of "life savings" is—finally decided maybe they'd need to hire an editor, too) and put a down payment on an Itek tricolor for the fancy stuff, a used ATF-Davidson that could do pamphlets, assorted layout, platemaking, collating, and binding equipment—then used what they had left to buy a six-pack. They celebrated—as best they could with what they'd been able to afford—the founding of "Bonewitz & Howler, Publishers," held a board meeting and immediately voted to change that to "Sage Publishing, Inc.," voting also not to reveal to their customers the origin of the material. They would use the Ben Franklin trick: pen names, all belonging to themselves.

Next morning, they had an argument about whether to try to hire a professional editor.

"But they come out grammatically correct already. Why do we need an editor?"

"Because they won't always," Howler said. "And we might mess ourselves up if we try to do it ourselves. Can you see us tryin' to get grammar right? We can't even figure out the plural of 'life savings.' There probably *ain't* a plural! But an editor can tell you how to say it so your reader doesn't think you're an illiterate."

"They *won't* someday come out with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

bad grammar, Ace—because I instructed the program to not *print* any that don't have the grammar correct. It discards anything it comes up with that doesn't obey strict rules."

"See? You're wastin'. If we had an editor, we could use some of those."

They reached a compromise. They couldn't afford to hire an editor yet, but Bonewitz would modify the program so it saved the sayings it was discarding; later, they'd print them off the backup disk—when they were set up to use them.

They spent four weeks learning about weights, inks, finishes, plates, and tiny specs on the rollers—vacuumed the house every day for a week to get rid of enough of these last to render their product passable. They used this time to design the layout of their first creation.

"Just sayings."

"No, we gotta have an introduction of some kind."

"Why?" Bonewitz defended his program. "The sayings speak for themselves."

"But the reader wants to see, 'Introduction by some bigwig' on the cover."

"You know any bigwigs?"

"I'll get one of my old college profs to do it."

"Right. Who's heard of your old college profs?"

Howler narrated in his best voice, " . . . 'Introduction by Dr. Jayne Marsden.' How's that?"

Bonewitz considered. "That actually sounds good."

They argued about how much to tell Ms. Marsden about the origin of the sayings.

"Look, why don't we tell her—and the reader—that it's from a 'truth processing program.' That's ambiguous enough so no one will be able to copy what you actually did."

"Can't. If we call it 'truth,' somebody might follow something the book says, get hurt—and sue us. We might lose. And if we call it fiction, the book loses its appeal."

"So? A disclaimer. We put in a disclaimer."

"That's legal expense. We go to a lawyer . . . before you know it he'll be getting thirty percent of all our gross. We'll have contracts, trademarks, service marks, disclaimers, indemnities, federal, state, county, town, and *street* filings, for crying out loud—and he'll have our money."

"Where'd *you* learn about lawyers?"

"Wrote my own computer program once and sold it. I even got to hold some of the money for a while."

"Oh."

They decided to call it "truth," author a disclaimer paragraph themselves, and endure the attendant risk.

Meanwhile, Bonewitz's program kept printing out page after page.

The Society of Independent People has no members.

Success breeds comfort, and comfort breeds failure.

All roads lead here.

Dr. Marsden at first wanted to write the Introduction for free; they insisted that she accept five percent of any net

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

they might make. She countered by saying that if the person who'd devised this "truth processing" program were between eighteen and seventy-five years old, she'd want to marry him—so she'd be happy to forego the royalty if they'd just tell her who this "Richard Poor" was.

Marsden was thirty-two years old. And not the homely female Ph.D. depicted in ads in medical and other journals with the motive of not injuring male egos.

Her comment created friction.

"She likes me." Bonewitz said smugly. "Can I help it?"

"She doesn't like you," Howler disagreed. "She doesn't even *know* you."

"Sure she does. She knows my work. That's what females are interested in—not what you look like."

"Well . . . just don't mess up, okay? Did you make those changes yet?"

"Yeah. A snap."

"Print the two outputs?"

"Right here."

Howler studied one for a few moments, then the other. "Terrible."

"I know."

Bonewitz had modified the truth constraint to bring about first slightly *less* truthful statements, then slightly *more* truthful ones—truth, again, being what was most consistent about the original data that had been input. The program had responded by producing remarks of a distinctly different character:

Defining "pseudoscience" as any study whose basic premise can not be readily demonstrated using laboratory instruments, then astrology, psychology, evolution, all cosmologies, and all theologies, are pseudosciences.

In most nations, the smallest minority, and the most maligned, is the rich.

When in Rome, expect some of the people around you to do as the Romans do.

"I suppose we could make an argument that each one of these is true, technically . . . but they won't sell a stick of bubble gum."

"I know."

"And it doesn't seem to matter whether you ask for less truth or more." Howler handed the pages back to Bonewitz. "Can't show these to Prof Marsden."

"You do and I'll kill you. She's sweet on me."

Howler shook his head. "Might as well set the parameters back the way you got them. Get some more sayings so we'll be ready with a sequel if this thing sells. It will. It's *gotta*."

Bonewitz said, "I figured I'd experiment a little more. This is interesting. Why should the sayings degrade in *both* directions?"

"Relative maximum, or point of inflection, or something."

"I know what it's *called*, dummo—but why's it there?"

"Hey, we got no time for R&D. We gotta go to press. When we start up a Research & Development group—you can be the manager, okay?"

"I'm already the president; I don't want to be the manager. I want to know why this is happening!"

"Could you hold off until we get the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

damned plates etched and run off the first edition?"

" . . . All right."

Marsden came in the next day with what she said was the first draft of her Introduction.

Howler ran off copies of the pages, gave them to Bonewitz.

"Hey, I'm the president. *I* get the original."

"Oh, yeah." Howler handed it over reluctantly. "Whaddaya think, maybe she did it on perfumed paper for you?"

"You never know." Bonewitz read. Five minutes later he lifted his head. "No good. We're going to have to tell her more."

"I was just thinkin' the same thing."

"Maybe we ought to let her in on the whole thing."

"You'd like that, wouldn't you?"

"You're the one who wanted to get an editor. She knows grammar and —heck, she knows editing marks better than we do. And she isn't asking to be paid."

"Yeah . . . You make it sound tempting."

The Introduction was unusable; that decided the issue. Marsden was invited to a meeting the coming Thursday at six after her last class.

Jim Bonewitz tried not to be distracted by the light yellow hair hanging straight but sensuously to Jayne Marsden's shoulders, by the way her facial features and posture had relaxed to a state of quiet and perhaps even slightly adoring contentment rather than annoyance, when Howler had told her who the program's author was; diverted his eyes from trying to estimate her measurements, or appreciate the fashionable high heeled shoes she wore or the way she had used her scarf as a careless belt for her one piece outfit.

"I can't tell you all the details of how my program works," his voice shook nervously at the start—he took a breath —"but"—she leaned over his shoulder, her chin nearly touching it, her cheek nearly touching his —"but . . . uhm . . . mainly, I've put lots and lots of travel books, and other first person accounts of things, and lots of *reference* information, together in a memory, and the program tries to make up new statements that are true as far as it can tell."

"Why, that's wonderful!"

"It is?"

"I forgot to tell you," Howler said. "Her graduate thesis was on 'the role of truthfulness and its opposite in our society.' "

"Gee, that's fascinating, Ms. Marsden. . . . "

Howler quietly excused himself and went upstairs and had a beer.

Given that there were only three things abut the program that Bonewitz was willing to reveal, even to him, he figured Bonewtiz must have covered them very thoroughly. He checked his watch: fifteen minutes apiece.

"Hi," he said as cheerfully as he could.

"I can do a *quite good* introduction now," Marsden told him. "Thank you for inviting me."

"Nothin'," said Howler.

"Jim says you might want some editing help with later work?"

"Depends—but we might, yeah."

"Well, I'm available."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Great."

Bonewitz helped her on with her coat. "Bye," she said to her former student.

"Bye, Professor Marsden."

" 'Jayne'—please."

"Okay. Jayne."

The revised Intro, when it came back, was a blockbuster and let them finish. They now had stacks of the first run in the basement and in several rooms of the house. But they found they couldn't sell a hundred, much less a million, without a distribution network such as the large publishing houses already have in place.

They tried friends, and panhandling them on the local campuses—Howler even stood on a street corner for several days next to stacks that gradually became shorter . . . until he was picked up by a policeman.

The Lieutenant down at the station house, when he saw what the merchandise was, let him go without booking him, but cautioned him about trying to operate a bookselling establishment without a license in this town again.

They made a list of all the bookstores in the area within commuting distance, and planned out an in-person direct selling campaign, estimated the most optimistic number of copies they could expect to sell per, multiplied by the price they were asking—and were disappointed. And the second monthly payment on the equipment was coming due. And they needed to order paper, and ink, and those goddamn plates, and . . .

On top of this they quickly learned they'd have to lower their price to get the booksellers interested, and guarantee buyback of the unsold copies.

"Jesus," Howler said.

"*They* might be interested."

"Huh?"

"Religious people. They're usually interested in truth."

"Oh, yeah. And science people."

They made a list. Then they went to the largest magazine shop in three counties, and listed the titles, addresses, and phone numbers of all magazines serving the interests they'd listed.

Advertising rates for half page, quarter page, eighth column—anything visible, it seemed—were astronomical or at best uncomfortably straining. They chose a few with good circulation and having affordable hobbyists' classifieds at the end, also some local newspapers—classifieds here were practically free—and investigated a local direct mail campaign since they already had the means for printing attractive color brochures and might stuff people's mailboxes themselves.

This last worked.

Depositing their first mail load of checks occasioned another six-pack. True, there were only three checks . . . but they knew what those checks boded.

One day when Marsden was there looking over copy for a planned sequel, Officer Santana came by and told them that since they were operating a business out of their home, they'd have to register it with the local authorities and pay the applicable fees; they did so. He informed them cheerfully that, zoning-wise, however, they were fine.

Marsden told the boys, "Don't ever

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

say 'zoningwise' in print. The 'wise' suffix looks ugly in print; editors won't let it pass."

They nodded.

On her way out she picked up some pages hanging sloppily over the edge of the TV cabinet. "What's this?" she asked, after reading a few lines.

"Oh, Jim's been playin' with a few of the parameters he sets to tell his program what to do. Tryin' to figure out why the quality goes to hell if we fool with the truth constraint at all."

"Why, these are fascinating! Do you have more of them?"

"Sure," Howler said. "But do ya know what'll happen if we try to sell them?"

"Not necessarily," Marsden said slowly. "—May I have copies of these pages, Jim? I'd like to think over how they might be presented. The scientific community might really be able to sink its teeth into something like this . . . "

Bonewitz trotted downstairs and made the copies, brought them back up.

He handed them to her.

"You know, Jim," she began, facing Bonewitz, "I've refrained from asking you for a date because I didn't want to insert a new pressure during your critical start-up phase. But I think your company's solidly into the selling phase now . . . and I *would* like to have dinner with you, even if only to discuss the possibilities for something like this. I think this kind of output may be very significant." She looked at Howler. "That is—if neither of you objects?"

"Sure!" Bonewitz accepted quickly, before his housemate could open his mouth. "Ace could come the first time too, okay? Do you really think it could be significant?"

"Significant," Howler said, when she'd gone. "Jesus. Can't you tell what she's after?"

"If you don't want to come on our date—you're welcome to stay home."

"Awright. I retract, cancel, and withdraw the remark."

"Good. Business is turning you into a gentleman."

"Is it that bad?"

Soon they had to trade in their post office box and lay out fifty bucks for a post office *drawer*. But this was an enjoyable expenditure, and occasioned another six-pack. This time they invited Marsden.

"I might like to do a piece on this unusual phenomenon," she told them. "Maybe a short book. I'd be happy to accept a ten percent royalty on the net. You might make a few dollars." She added, sipping, then slumping back into the sofa cushion, "I haven't had anything *good* published since my thesis."

She sat forward again. "Jim, can you vary the parameters more, and give me additional sample outputs, telling me the amount of truth constraint that was used for each saying? This whole mathematical psychology, sociology, psychoeconomics scene is new, kind of at the level of a pseudoscience. Your publishing house might make a mark in it, as more of a rational authority. Imagine other authors reading my book or your other publications—and coming to *you* to try to have their ideas published."

Bonewitz liked the sound of that.

Howler didn't think it was bad either. "Do it," he said. Bonewitz started scribbling notes as to how he might vary

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the parameters. Occasionally he looked up to ask Marsden a question: Slightly more humor, or less? Toward religion, or away from it? Jack up the influences encouraging sarcasm—or diminish them?

She seemed to want *both* of everything.

The boys greeted Marsden on her next visit with an assortment which included the following:

Computer makes possible creating a new language specific to a given problem at hand—by one person, in a small fraction of a lifetime. Apollo was an example of the massive potential resulting from this capability.

Watch with your eyes open and you'll see that "World Peace" is just another slogan people are willing to kill and die for.

"I am," diluted: "I have."

A sentence is worth a thousand words.

When the polls say one thing and the facts say another, the facts say the polls are dishonest.

And on the seventh day God rested—and look what happened!

"Some of these don't seem necessarily to be 'true' in the objective sense some of the earlier ones were," Marsden observed.

"And some are only fit for restricted audiences," Howler added. "We'd be taking a risk if we put them in a general book."

"What I find most interesting," the program author said, "is that you can't tell which ones had the too-high truth constraint, and which the too-low, by just reading them."

"Yes," Marsden said. "—That's what I want to do my book about." She looked up. "How are sales coming along?"

Howler answered, "We're still on the 'up' part of the curve. We seem to get more orders each day than we did the previous day. We've put a little of the cash into buying direct-mail address lists—you can get 'em for almost any demographical cross-section you can name: scientists in the midwest between ages twenty and forty with salaries over $40,000, who like horseback riding or camping . . . anything."

The professor returned her attention to the pages. "I want to find out *why* the sayings make the most comfortable sense right around a certain truth constraint value . . . and why that value isn't '1.0' or something very close to it. Could you run off some of those sets you said you were going to do from particular groups of books, such as religious, astronomy, common household magazine, and so on?"

"I've already started," Bonewitz said. "Ace wants to start selling them soon—to select audiences, of course. Funny thing . . . for each different basic information set I specify, the primary truth constraint parameter peaks near a different value. I can't figure that."

"You just maximize 'em buddy—I'll do the rest. There's some group out there to go with any kind of sayings you

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

can come up with, long as you make 'em non-offensive." Howler picked up a copy of *Atlantic Monthly* in one hand, something bearing monsters and spaceships on its cover, in the other; shook them to emphasize.

Marsden mused, "The magazine industry is already arranged to market that way. You also will be able to market one type of output to one group, another to another." She asked, "I'm curious, which type of information set peaks at the highest value—out of those you've tried so far?"

Bonewitz looked at Howler's right hand. "You wouldn't believe me if I told you. Let me do some more work, okay?"

Cash was flowing. They bought one of each of about a hundred magazines; made a "general household magazine" category. Marsden's interest in her endeavor grew in proportion to the number of pages of output she accumulated.

"I'm going to present a paper at the second annual Mathematical Symbology Conference in Dallas," she told them one day. "This is remarkable. The constraint values range from zero-point-five, all the way up into the point-nines in one or two cases. Tell me exactly what I can't reveal about your method—I want to tell them everything else!"

Bonewitz told her which factors could give clues to perceptive enough programmers as to how to write the program.

She made her presentation—putting in a plug for Sage Publishing: "a leader in sagacious, rational analysis in the new intertwined fields of mathematical sociology, symbology, and psychological economics." Within three months, they received a dozen manuscripts from would-be experts. They hired her, officially.

"But no stock—all right?" Howler insisted. "She could wind up your wife! I don't want to lose what percentage I have."

"No stock," Bonewitz agreed.

Dates with the president, however, were not open to voting or other objection.

"I'm getting close to a solution," Marsden said to her date across a dinner table at *Luigi's*. "I'm going to present it at the triple-S: Seattle Symbology Symposium. I'm going to speak right after Leon Zouderman."

Bonewitz had heard of him. "Edit it real good," he advised. "I understand he's a tough act to follow."

"Let's just hope he doesn't bring animals or something. He's always got some kind of gimmick. But I'm going to show him who's the leader in this field—as of now!"

"I maybe get a good night kiss if I say, 'You're better than Leon Zouderman, any day'?"

"It's worth a try."

It was a lot like trying to figure out what a computer program was going to do, Bonewitz decided later.

But a lot more fun, if you were right.

Zouderman got off the stage; the chair waited long minutes for the applause to die down, then introduced the next speaker. Marsden stood at the podium, smiling in response to the polite recognition.

"What if I were to tell you," she began, when she felt she had enough of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

their attention, "that not everything Mr. Zouderman has just told you is entirely one hundred percent true?" This riveted them—and caused some murmurs to arise as well; criticizing Zouderman (at this moment in his career) was somethng one simply did not do.

"If I told you," she continued, "that even the great Leon Zouderman does not apply an absolute one-point-zero truth constraint to the statements he makes? Because he *can't afford to?*"

Nearly everyone reacted with some audible sound—at least a light gasp—except Zouderman himself, who sat in a front row seat looking up with wide-eyed interest.

A few rows behind him sat Bonewitz and Howler; the company was doing well; they rationalized that this was the major field their publishing operation was involved with—and they wanted to see Marsden sling the adjectives in person.

"Careful computer studies have now shown that it is just as disadvantageous to try to *exceed* a listener's, reader's, or viewer's perception of the truth, as it is to fall short of that perception." Marsden used controls invisible to the audience to begin to bring down the lighting. "It was remarked some two thousand and more years ago that the sharpest truth—will fall on the deafest ears. The various gentlemen who are reputed to have pointed out this fundamental truth did not have modern, high speed computers available . . . but we do. Through facilities provided by my benefactor, Sage Publishing, I've been able to assemble computer outputs showing both *that* and *why* the truth content presented in a given speech, document . . . even a comedian's joke . . . is often purposely quite different from what we would call 'one-point-zero.' "

She activated the projection screens; brought in overheads containing slowly rotating holograms with sayings, having originated at a three-dimensional infinity, rolling by; and low background narration in the authoritative voice of well known vidbox character "So-Ar," king of the Galactic Outer Ring worlds . . . as she spoke over this background she watched to make sure that even Zouderman was suitably impressed. Occasionally she cast a glance at Bonewitz—he invariably smiled back, giving her a thumbs-up with eyes and facial expression.

For a few minutes, Marsden held her audience spellbound with explanations of how, from information theory, through media theory, all the way up to the latest mathematical treatments of traditionally non-mathematical subjects, it was a fundamental truth that a message from a source had to be tailored to the expectations of its receiver. Exceeding the capacity or violating the mutually agreed to code, resulted in *less* information getting across, period.

"An individual's—or an audience's —appreciation of a subject is at a certain level of factualness," she told them. The message, 'Six minus three equals five' will *never* be accepted—as sarcasm or anything else—because in mathematics we have absolute certain knowledge, and when we listen as mathematicians the message must be at that same level of absolute certainty—we may say we are using a truth constraint criterion of one-point-zero. Any less

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

truth than this, and the statement will appear erroneous. If our statement is an axiom, postulate, or proposed theorem yet to be proved—it must be labeled so, to maintain this factualness.

"In the physical sciences, where we have less certain knowledge, we require that a statement be less forceful—in keeping with how much we feel we know about the topic. An astronomer who says, 'The Big Bang happened in the year 20,555,332,506 B.C.E.' will be derided . . . not because it *didn't* happen in that year, but because he has offended our sense of the degree of certainty that is appropriate to the pronouncement. If he said 'About five to five trillion years ago,' we'd likewise be offended.

"Now let's get down to the nitty-gritty of what this new data reveals." The scenes on the raised screens towering behind her at the back of the stage, and in the overheads, changed to show a spectrum of human information-related activities. A view of a large political demonstration filled one holo volume—it could have been any, the pickets were not readable at the distance from which the view had been recorded—a newscaster's face filled a screen behind her, voice emanating though the words were remote and indistinct; a teenage girl whacked away at a computer terminal in an intense dress-design frenzy in another. There was a *live* view of this very symposium and very auditorium—now; a famed country singer strumming her guitar; a colorful military animation showing a command beam going up to space, and, symbolically, its multiple repercussions . . .

The Ph.D. leaned on her overall volume control, brought her own voice in gradually as the background sounds faded. " . . . but in how many fields are humans knowledgeable at all? Especially John and Mary Q. Public, trying to make ends meet when even Banknet won't agree with the arithmetic they've done themselves and double-checked? We live in confusion a pretty proportion of the time—do we not? In regard to most important matters of our time, most people hold an open mind, will readily admit that they don't know all the answers, aren't sure, would like more information."

She straightened; all sound other than her own voice was gone now. "The appropriate message for such a receiver is one with a truth content of about fifty percent. Point-five-oh. Much more, and you'll offend your receiver's innate feeling that the message oughtn't be certain in any direction, since no one really knows the answers yet."

She indicated the scenes around her with a hand; they still progressed, though soundlessly. "Sources of messages distributed for masses of common folks then, eventually learn—or fail because they didn't learn—that, optimally, they must present the kind of message that approaches what I will call an exact point-five-oh truth constraint or truth content: namely, controversy. Assertions or allegations—and their opposites. 'Both sides.' I am saying that the typical message, when the receiving parties are presumed to be in frames of mind to receive information on topics that boggle their minds in the first place, optimally ought to appear half false to *each* receiver.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"In copy aimed at persons knowledgeable in a given scientific field," she continued, "the factualness level is tailored to a different frame of mind—a different expectation of truth content. Note that this means the whole shebang is best produced at that level. A reader of a scientific journal has, as we now know from our mathematical studies, every bit as naive a perception of political affairs as does the common man or woman on the street. No matter. The publisher and editor quickly learn that they must clothe their political editorial essays in facts drawn from the areas of expertise of the readership. That editorial had best be seventy-five to eighty-five percent *fact*, no matter how it ends up. Thus it is as palatable and as unoffensive as it can be made to the average reader of the publication."

She blackened all displays. "Now if I told you which fields permit the *highest* truth constraint values, you would never believe me. I'm hesitant even to broach the subject."

She waited, let them beg for it.

"All right. I'll tell you. But don't blame me if you don't like it. It may not be *you*." More murmurs.

"These are *not* the fields where the proponents and receivers are most certain of themselves. Other than pure mathematics—where as I've said the constraint is an even one-point-oh and the readership will kill you if you so much as drop a minus sign in a proof they're trying to follow—these are the fields where the readership, listenership, so on, *want* to be told other than the truth. Comedy. A comedian can get away with telling you an absolute truth. He can say words which a statesman, politician, husband, or wife would never utter. He can tell you point-blank something you don't want to believe about yourself—because you've invited him to do so, for relief. You said, 'Surprise me; cross me; turn me on my head. Make me feel silly.'

"There is another field, brought to my attention because it is a hobby of one of the executives of Sage Publishing, where the receivership en masse are *determined* not to have presented to them something that is to be accepted at face value. If they can't argue with it, they don't want to hear about it. 'Tell me something I don't believe,' they demand. 'Tell me something which, if it were true, would mean my entire world is different from what I perceive it to be.' They are to be found involved in the most outlandish activities, often are ignored by us ordinary sane types. But our studies show that you can try to hit the gong with them. You can try to state an absolute truth. They won't be offended. They love it. I've read their responses. They try to come back with an even *more* absolute truth.

"And Visionaries. Not scientists, now: Visionaries. Frequently beginning as respected contributors within our own ranks, one day they outstrip us and find themselves having to defend themselves from our ridicule. Galileo, Darwin, O'Neill . . . we could list tens. You see, the bare truth was at first too much for their contemporaries. Yet such people effortlessly exchange ideas with one another, and with practitioners of the above three categories: scientifiction, comedy, mathematics.

"I might add to the above list of names that of a gentleman sitting right

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

here before me. He rides a wave of popularity at the moment . . . but I sense in his statements a gathering truthfulness. We shall see where it leads."

She touched a control to initiate the sequence that would bring up the lights. "Well, thank you for your attention. I appreciate your having heard me out."

The applause began. She closed her hand around a small object she'd had on the lectern surface, walked gracefully off the stage. She paused on the steps, acknowledging again the bounteous ovation.

She moved ever so slowly across the front row, arriving finally at the middle of it as the applause for the most part had concluded. She exposed the stopwatch she was holding just long enough for Zouderman to read it, grinned widely.

He tilted his head sideways in a grimace—then rose, smiling, and shook her hand warmly.

Jayne Marsden offered to take the boys to the prettiest restaurant in Seattle, which at the moment she believed was at the top of a Hyatt. Howler respectfully—and graciously, for him — declined, saying he thought he'd take in a basketball game.

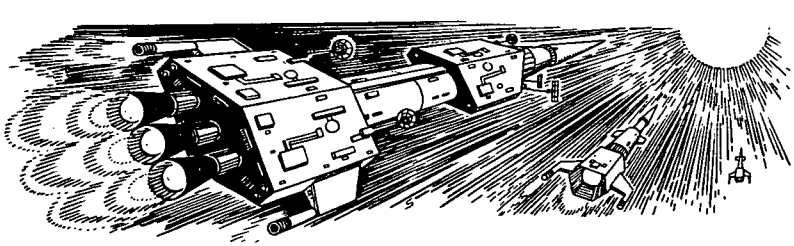
That evening James Maxwell Bonewitz and Jayne Marsden sat across from each other at a table, sipping wine and minding their truth constraints.

"Your hair is beautiful in this soft lighting, Jayne. And your eyes sparkle even more brightly than they did during that applause."

"You may be one of the most intelligent persons ever to have walked this Earth, Jim," Marsden countered. ■

● Science is immeasurably ahead of nature. For example, in the modern household the children are about the only things left that still have to be washed by hand.

Bill Vaughan



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Alternate View
WARM SUPERCONDUCTORS

John G. Cramer

© 1987 by John G. Cramer

I'm sure you know the plot: *a lost magical formula has eluded the wisest practitioners of the arcane art down through the ages. Now a cabal of young upstarts, with disdain for conventional wisdom and working against all odds, discovers the key ingredients that make the magic spell work, with spectacular results.* Sounds familiar, right? But this *isn't* schlock fantasy, folks. It's low temperature physics. The discovery of "warm" superconductivity was announced in mid-February of this year by a little known research group led by Prof. Ching-Wu (Paul) Chu of the University of Houston. A report of the work was published in the March 2 issue of *Physical Review Letters*. It describes a new material, now known to be $Y Ba_2 Cu_3 O_{6.8}$, that at atmospheric pressure becomes superconducting between 80 and 93 degrees Kelvin (represented as 93 K, or 93 Celsius-degrees above absolute zero). The paper estimates that the material should retain its superconducting properties even in the presence of magnetic fields as large as 80 to 180 Tesla.

What's so startling about this report? First, it offers the promise that superconductors can be made to operate above the temperature of boiling liquid nitrogen (77 K). Second, the spectacular magnetic properties of the new material suggest that it may soon be possible to construct superconducting electromagnets capable of producing extremely large magnetic fields. These possibilities have important implications for energy production, transmission, and storage, for surface transportation, for space propulsion, for new scientific tools, for medicine, and for gadgets of which no one has yet dreamed.

After Chu's announcement, perhaps 100 research laboratories around the world jumped into the investigation of warm superconductors. A veritable tidal wave of new data has emerged. Reports now suggest that the onset of superconductivity may have been observed at 240 K. That is just −33° C or −27° F, a typical outdoor temperature in a Minnesota winter. It offers the promise that superconductivity can soon be achieved in a good home freezer. To show the significance of this breakthrough, let's do some questions and answers.

Q: What is superconductivity? Superconductivity is a peculiar state of solid matter in which electrical resistance *completely vanishes*. Electrical resistance is a measure of the energy lost when an electrical current flows in a conducting material like copper or carbon. Normally the moving electrons of electrical current flow have collisions along their way and lose some energy. The lost energy becomes heat. An electric kitchen range, for example, uses this effect to convert electrical energy into heat for cooking food.

The loss rate of electrical energy due to current flow in a resistive wire follows the Ohm's law power equation $\mathbf{P = I^2R}$, in which the electrical resist-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ance **R** sets the rate of energy loss **P** due to a current flow **I**. In the best conductors, materials like silver and copper, the energy loss is minimized because **R** is small. And if **R** vanishes there is no energy loss at all.

Q: When was superconductivity discovered? Until 1911 it was believed that all conductors had electrical resistance, even at low temperatures. Then from the University of Leiden in the Netherlands came a remarkable announcement which shook the world of physics. Prof. Heike Kamerlingh Onnes of Leiden, the man who a few years earlier had been the first to liquefy helium at low temperatures, had discovered that when a thin column of mercury is cooled with liquid helium to below 4 K, its electrical resistance *completely disappears*. Onnes could find no evidence at all for even a trace of electrical resistance in the cooled sample. Later, as a dramatic demonstration of this effect, Onnes cooled a ring of lead, another superconducting material, to a few degrees Kelvin and set an electrical current flowing around it. He then transported the ring, still immersed in a bath of liquid helium, to London where a physics conference was in progress. He showed the startled physicists that the current flow he had initiated on the other side of the Channel was still flowing in the lead ring. At many laboratories similar rings were constructed, with currents flowing undiminished for decades with no observable current reduction or energy loss. It has been remarked that the zero resistance of a superconductor is the "zero-est zero" in physics.

Further investigation has shown that some 23 of the 92 natural elements in the periodic table become superconductors when cooled to temperatures sufficiently near to absolute zero. Among these superconducting elements are aluminum, zinc, niobium, tin, mercury, lead, and uranium. Curiously, the new $Y\,Ba_2\,Cu_3\,O_{6.8}$ material showing warm superconductivity is composed of elements (oxygen, copper, barium, and yttrium) that are *not* superconducting as individual materials.

Q: How does superconductivity work? From 1911 until 1957 the surprising disappearance of electrical resistance at low temperatures remained a mystery, despite the best efforts of some of the giants of theoretical physics to explain it. Finally in 1957 John Bardeen, Leon N. Cooper, and J. Robert Schrieffer, then of Bell Telephone Laboratories, produced a theory that finally explained what was happening in a superconductor. Their explanation, called the BCS theory of superconductivity, depends on subtle quantum mechanical effects acting in concert to completely eliminate electrical resistance. Conduction electrons in the material pair off to form "Cooper pairs" that move together along the conduction path. One Cooper pair follows closely in the wake of the pair preceding it along the path, each pair "drafting" the pair in front like race cars on a straightaway. This path-following reduces the energy loss to a value below the minimum permitted by quantum mechanics, with the result that there is no energy loss at all. Roughly in this way the frequent collisions and energy loss of normal conduction are eliminated and smooth superconductive current flow, electrical conduction without energy loss, becomes possible. For

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the new warm superconductors a more subtle mechanism seems to be involved that cannot be handled by the BCS theory as it stands. A new theory will probably be needed.

Q: How can superconductivity be used? While it took from 1911 to 1957 to gain some theoretical understanding of superconductivity, it required even longer for the first practical applications of superconductivity. The most interesting application of superconductors was to produce large magnetic fields, but it was found that at modest magnetic fields the superconducting properties disappeared. It took until the 1960s for this problem to be solved. Then the first superconducting magnets began to appear, bringing with them the possibility of large magnetic fields (up to 8-12 Tesla) for laboratory use. The superconducting SQUID devices for accurately detecting and measuring extremely small magnetic fields also came into wide laboratory use. High field superconducting magnets have become standard in the construction of large particle accelerators like those CERN and FermiLab. And superconducting resonant cavities that efficiently store electrical energy and produce very large electric fields are now used in accelerators at many nuclear physics laboratories, including my own laboratory at the University of Washington. But outside physics laboratories the applications of superconductors have been slower in coming. Superconducting magnets are now coming into use in medicine because they are required by the new technique of NMR imaging. And there has been serious engineering studies of a superconducting "energy pipeline" that might bring electrical power to the East Coast.

Q: Why are warm superconductors important? All of the above applications are hampered by the very low temperatures required by conventional superconductors. Liquid helium must be available in large quantities, and the devices themselves must reside in large and elaborate "cryostats" (giant thermos bottles) that protect the ultracold materials from the normal room-temperature surroundings. The energy needed to maintain these very low temperatures removes much of the attraction of using these no-energy-loss materials. Clearly superconductors that operate at higher temperatures will be very useful. Finding such "warm" superconductors, preferably that remain superconducting above the 77 K boiling point of liquid nitrogen, had become a sort of "Holy Grail" of low temperature physics. And now the Grail has been found!

Q: What kind of materials are needed for warm superconductors? In the search for warm superconductors, the theoretical understanding provided by the BCS theory has proved a treacherous ally. That theory roughly indicated that 35 K might be the highest temperature at which superconductivity could exist. This prediction is now known to be wrong. The theory has also been used to give rough guidelines for which alloys and materials might be the best warm superconductor candidates. Unfortunately, these predictions steered physicists away from materials containing oxygen (because oxygen tends to gobble up two electrons that might otherwise be used for conduction). There-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Illustration by William R. Warren, Jr., 1987

fore, it was thought, materials containing oxygen were a bad bet and they were ignored.

It now appears that oxygen is a key ingredient in warm superconductivity. The Y Ba_2 Cu_3 O_{6-8} material contains more oxygen atoms than anything else. The crystal structure of the material has been mapped with neutron diffraction and identified as a sort of two-layer checkerboard of copper atoms held in place by the other atoms.

Q: How long will it be before we will have devices using warm superconductors? This is a very difficult question to answer. The Y Ba_2 Cu_3 O_{6-8} material can be thought of as a kind of powdered rock that had been "sintered" or heated under pressure to fuse the powder particles together. Chu's group used very small samples of this material, only 4 millimeters long and with a cross sectional area of 0.5 mm^2.

Practical applications cannot really begin until literally miles of warm superconducting cable can be made avail-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

able. Such cable might be sheaths of high purity copper enclosing tubes filled with powdered superconducting material, or perhaps a copper strip with a thin film of the material on its surface. Perhaps this cable would be drawn, coils wound, and then heat applied to sinter the $Y\ Ba_2\ Cu_3\ O_{6.8}$ material in place. Development of fabrication techniques for such cable will require large investments in time, technical manpower, and development capital. Material science groups at major federal laboratories are already moving into high gear to develop the needed technology. I would guess that practical applications of warm superconductors might appear in as little as one year, but they could also require a much longer time if major problems are encountered.

Q: Finally, what are the implications of this new technology for science fiction? As a teenager I remember reading stories in John Campbell's *Astounding* featuring space ships that used vacuum tube electronics in their control systems and were piloted by individuals who did calculations with slide rules and tables of logarithms. It all sounded quite plausible at the time, but it has all been long since obsoleted by the invention of the transistor and the development of microelectronics. This is a pitfall to be avoided. We would like to have stories that at best predict the future and at worst are not rendered quaint and mildly ludicrous by the inevitable march of scientific progress.

In the event that the technology of warm superconductors becomes practical, it will profoundly change the way things are done. The familiar electrical transmission towers that march across the countryside and foul radio reception with their corona static will be utterly gone, replaced by underground "energy pipelines" that move electrical energy across the continent with no measurable energy loss. Power generation facilities can be located farther from the consumers, possibly configured in large "power parks" containing multiple reactors or fusion plants (using warm superconducting magnets to contain their plasmas). Trains will glide frictionlessly over the countryside, levitated on cushions of superconducting magnets.

Energy storage with high field superconducting magnets may compete with storage batteries and chemical fuels for the same turf. Magnetic fields have very large energy densities, and the energy stored goes up as the square of the field. A volume of space containing a 100 Tesla magnetic field would contain about as much energy as an equivalent volume of TNT. One can imagine a doughnut shaped superconducting magnet storage device that holds about the same energy as the same volume of gasoline and is given a current boost perhaps once a month to top off its energy store.

In any case, we have crossed a threshold. We now know how to make warm superconductors. We will learn to make them better. The world will never be the same. ■

REFERENCES

Warm Superconductors:

A. L. Robinson, Science *35*, 531 (1987);

M. K. Wu, J. R. Ashburn, C. J. Torng, P. H. Hor, R. L. Meng, L. Gao, Z. J. Huang, Y. Q. Wang, and C. W. Chu, Physical Review Letters *58*, 908 (1987).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I think I had better get this one into circulation—paper, tape, reel, software, however you're used to reading these reports. I have a feeling I'd better get this one out fairly fast, before it doesn't matter any more.

You see a lot of this sort of thing on the 3V: evil beings with a gimmick that can destroy the world, or the universe, or something larger (preSpace theorists called it the multiverse, but it's a name that has gone out of fashion since then; it sounds a lot like an anthology of bad poetry). There's always a worldwrecker doing his stuff on the 3V somewhere, and there is always a brave and rayproof hero type who manages to stop this worldwrecker about thirty-two seconds before he pushes the button, or tosses the bomb, or whatever it is he's set up to manage.

This hero type usually gets good advice from the Kelans somewhere along the way, of course—the Kelans being, as I may have been caught saying before, pretty good stand-ins for Wise Beings of the Universe, until and unless some Wiser Beings pop up out of the everywhere and into the daily news.

I am not rayproof, and I am not any braver than, given a Survivor's job, I have to be. And (this surprises me at least as much as it surprises you) I did not get any good advice from the Kelans on this one. I haven't seen a Kelan in some time, and neither has anybody else. They've gotten snarled up in one of their Passn tournaments (Passn, if you haven't run across it, is a game that seems to combine the weirdest attributes of 3D chess, free-market capitalism, and gravitational acrobatics, with a little firewalking thrown in on the side somewhere), and a little thing like the end of the universe, or universes, wouldn't attract their attention any.

This one—saving the universe, or thereabouts—I managed fairly much on my own. Which is the story, but not quite the point.

I fell into it because there are a few people—due to a predicament I seem to have unsnarled, once upon a time—who think my business card ought to have more than one line on it. As it stands, it just reads: *Gerald Knave: Survivor*. These people—at first a round little man named Horbuck, who looked as if he got all his exercise by having somebody grab the top of his head, lift him off the ground, and dribble him downcourt for a while—thought the additional line ought to read: *Expert on Pheromones*.

Horbuck ran into me on one of my periodic Earth visits, during which I was trying to unsnarl my tax situation and snatch a modest profit out of the jaws of the slavering dragon otherwise known as the Comity Income Assessment Board. I was busily finding out, as some of you may have found out, that this cannot be done, and I had retired for a brief rest to a small place I maintain on what used to be Manhattan Island, near a fine vista of trees and ancient buildings that was either known, preSpace, as Central Parking or as Centaur's Park. I was busily polishing silver—housework soothes the mind, such as it is, and I do my own except when rushed or otherwise bothered—when the doorbell rang.

This is not supposed to happen. I have spent more money than you would readily believe to keep my address, and my phone code, wholly private—which is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to say, available to no one except my affections of the moment, and the Comity Income Assessment Board.

I pushed a button and said into the speaker: "Who's there?" But that was the third thing I did. The second was to cap the polish and wrap the silver with my rag. The first was to put my right hand on the slug gun I had at my hip. (Habit. I put on a gun, and usually a slug gun, when I get up, the way some people put on their contacts or their teeth or their pants—and I sleep with one under my pillow.)

A high, gargling sort of voice told me that its name was Horbuck, and that it had matters of great import to discuss with me. It had (of course) gotten my address from Comity files, which, I found out later, cost enough money to stagger me.

I said: "Don't move," into the speaker, faced the front door, raised the slug gun and pushed another button, left-handed. The door swung open, inward.

Horbuck, all alone, was standing out there, dressed—so help me—in a top hat, a black tie, and a tuxedo. He looked absolutely incredible, and I suppose it was possible that he was smuggling a bomb under the damn hat, but it never even occurred to me.

I said: "Come in," and when he did, walking very cautiously, I shut the door behind him with the same button. He looked around at it as it whuffed closed, and then banged dead-shut. (I know there are such things as silent doors. I also know that when I shut a door I want to know it's shut. The bang is the easiest way I can think of to tell me.) After a second or so I asked him why he had come looking for me, and he gave it all to me in one word:

"Langatiar."

I motioned to a chair and he looked around and then sat in it. I thumbed a switch, still left-handed, to call a Robbie for the silver, and when one glided out of its closet I instructed it by push-button, still left-handed, and walked over to sit in the living-room with my guest. I picked a chair-and-a-half (if you have a very friendly companion, and I hope you do, it can be called a couch) opposite and sat down and kept my gun pointed.

"Well," I said. "What have they done, come out of their swoon at last and started attacking neighboring worlds?"

"Not at all," he said. He coughed politely and raised a hand to his hat, and I nodded, and he took it off, snapped it shut, and placed it in his lap like a black silk dinner plate. "And they have not been in—as you call it—a 'swoon.' They are in an odd state, and they remain in that state. They are not cataleptic, or what might in the Langatiaran case pass for catalepsy—in fact, there is a physical ailment which closely resembles human catalepsy; it takes the form of locking muscular structure along the long axis of the Langatiaran body, so that—"

I put the gun away. Enough was enough. Whatever Horbuck was, he was either no sort of assassin, or he had decided to talk me to death. That put me in no danger—a week or so of dealing with the Comity Income people had immunized me thoroughly—and I could have listened to him for hours without serious damage. But why bother?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Whatever it is," I said, "they haven't got it. And you wouldn't be worried about them unless they had *something*. You might as well tell me what it is."

"Nothing has changed in their society," he said after a second. "They do not, as I have said, have any form of catalepsy—societally, that is to say—but, in the fairly short run, that fact is not going to matter."

"They keep things running, after a fashion," I said. Langatiar had a trade setup with two or three planets, of which only one human world was a part (the Reel, of course; sooner or later, the Reel buys at least one of anything, as the vacation-and-entertainment capital world it is); the Langatiarans produced a sort of semisolid that was both intoxicating and habit-forming to human beings (you rubbed it on the back of your neck, and you saw Visions, capital V, that lasted for a couple of hours, though Visions is too small a word, since the things were full-sensory; I understand that one non-human race, people I'm not familiar with, used the stuff as a high-grade lubricant). Not exactly a major trade article, but if traffic in it stopped the Reel would scream, and if the Reel screamed the echoes would be heard in every planet that had human beings on it and dealt with Comity money in any fashion at all.

"They continue to work, they continue to eat and sleep, they continue to frequent public entertainments—though these have suffered some changes, of course. They do nothing else. They are a two-sexed race, like our own, but sexual activity appears to have stopped on Langatiar, and stopped completely."

This was old news, as far as it was news at all—the sexual activity of a race of beings who looked either like misshapen turtles, or like pyramids of deep-purple jelly with varicolored shells on their heads, wasn't going to be of major interest to Earth nets, but there had been a few items in specialized channels. I said: "That's the way things were a couple of standard years ago. At least, that's how I understand they were—I haven't been out that way to see."

Having little interest in the place myself, and no motive but curiosity. I have a lot of curiosity (which is why I keep up with a lot of specialized channels in the first place), but nobody has enough time or money to indulge it all.

"Quite correct, Mr. Knave," Horbuck said. He looked as sad as if he were talking about dearly beloved relatives, and in another sentence I began to see why. "If the current state continues, the race will be extinct in approximately ninety standard years."

That was an aspect of things that should have occurred to me, and hadn't. Well, I'd had other things on my mind.

And races do become extinct, just like people.

But this seemed like the Hell of a reason for it. I was about to say something like that when Horbuck put in:

"We suspect, Mr. Knave, that this is not the first time such a thing has occurred. And we suspect, further, that it is both intentional—on the part of some being or beings, somewhere—and reversible."

I blinked. I got my other Robbie out of the closet by voice and told him to mix me a drink—getting, and passing on to the Robbie, an order for the same

LICENSED TO UNLIMITED
ELECTRONIC REPRODUCTION PROHIBITED

from my round little guest—and said the only thing that occurred to me:

"What do you mean, 'we'?"

Horbuck's explanation—what with the arrival of our drinks, fresh-ground Hawaiian coffee, heavy cream and sugar, and what with the tendency of little men in top hats and tuxedos to say everything four or five times, and in as complicated a way as possible—took quite a while. I will boil it down for you here, and tell you at the same time that Hawaiian coffee—Kona—is too sweet for every day, unless you mix it with something like Colombian, but I felt I needed the shock to my taste buds, and doubted that Horbuck would know the difference.

He surprised me: he took a sip, black, like any sensible man, before adding in some cream, and raised his eyebrows at me. "Remarkable," he said.

"Usually," I said, "I do my own grinding and brewing. It seems to taste just a bit better that way."

He nodded as if he understood, and maybe he did. And then he went on with his explanation.

Horbuck (and associates) were specialists in Langatiaran life forms, based on Ravenal. That alone was enough to raise *my* eyebrows; somebody had paid the Hell of a lot of money to enable Horbuck to make the trip from Ravenal to Earth. He wasn't official, he wasn't Armed Forces and he wasn't me, so he didn't have an unlimited space-four card. He'd had to pay heavily, for the journey—unless, of course, he had started out two hundred and fifty-five years before and come in at the speed of light, which didn't sound probable. For one thing, there hadn't been a Langatiaran problem two hundred and fifty-five years ago. there had just barely been a Ravenal, and only the beginnings of the Scholarte that is generally called the finest in the known universe (for human beings; Kelans and such manage these things better, but humans aren't even close to being stand-ins for the Wise Beings, and we settle for schools, disciplines and minds as good as those in Ravenal Scholarte).

They'd begun to notice the sudden, and complete, lack of interest in sexual matters almost as rapidly as a few Langatiaran analysts—who had, after all, a slightly more personal interest in the matter—had noticed it. Between the Ravenal group and the native Langatiarans, a lot of work had been done in a bit less than four years, and it had been established a) that there was no physical disease-form responsible for the outbreak of celibacy; b) there was nothing new that had been added to food, drink or air (down to current limits of detection and then some; a lot of Ravenal people had become interested in the odd problem, and a lot of equipment had been made available); and c) there had been no sudden societal shock or change responsible for the mass turn-off, which might have had, they theorized, a psychological basis. Professors of Psychological Statics, such as they are, swore that such mass action was possible as a limiting case, and cited things like Grimm's Law to prove it; if you know what Grimm's Law is—it seems to be preSpace, if that's any help—and it doesn't involve a wicked stepmother or something of the sort, please don't let me know; now and again I cherish my ignorance. . . .

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"In any case," Horbuck said—we'd been through a second cup of Kona, and I'd instructed the Robbie to make the next one High Colombian; since I wanted to wash out my taste buds, and I also wanted to find out if my guest could tell the difference—"In any case, I, personally, do not believe that such a mass psychological effect can exist; it would never, it seems to me, be universal. There would be exceptions."

I nodded. "Agreed. And you're sure there haven't been any exceptions? Two little pyramids tiptoeing off into the bushes, for instance?"

Horbuck's group, and the natives, had done a lot of investigating. He told me about that, in fantastic detail.

There were no exceptions.

I wasn't quite sure—that would have to wait until I went and looked, if I ever did—but I was as sure as I was going to be from a distance.

"There's just one thing I don't understand," I said. "What do I have to do with all this?"

"Pheromones," he said. "You may know something, or be able to discover something, which we have not yet been able to find for ourselves. As an expert, after all—"

Somewhere in there I cancelled my next coffee (noticing that the other Robbie had finished up my silver and gone quietly back to its closet), and told the available Robbie to fetch me a Gimlet instead, and in a hurry. My guest stuck to coffee; but I needed something a good deal stronger, all of a sudden.

Yes, I told little round Horbuck, I had been involved in a difficulty that had involved pheromones. But I was not, repeat not, an expert. I knew about as much as the average interested being, and I didn't have the background to learn much more.

Pheromones are chemical cues. What they tell the being receiving them is, one way or another, *Come up and see me some time*. Some beings own them, and some don't (and the ones that don't have some odd substitutes for them), and they are usually, but not always, confined to a single sex. In humans, it's the female who has the pheromones (and it isn't anything she can manage consciously, much to the regret of a lot of female humans) and the male who responds to them, which explains a lot about human history, though not quite enough.

Langatiarans, I gathered, had pheromones.

"Pheromone equivalents," Horbuck said. He had sipped his cup of High Colombian and nodded quietly, but whether that meant he had appreciated the difference, or just felt like nodding, I had no idea. "They are chemical cues, but not precisely the same chemical cues."

"Naturally," I said. "If they were the same chemical cues, Langatiarans would be mobbed by human beings, panting and moaning."

Horbuck blinked. I lit up a cigarette (the label says they're Inoson Pleasure Sticks, Guaranteed non-Carcinogenic, and they are every bit as expensive as that sort of name sounds; I buy mine long, thin and in red wrappers) and ordered up another Gimlet. Horbuck was still working on his High Colombian.

"Perhaps. At any rate, there would be—odd effects."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"But not the odd effects you're getting now."

"By no means," he said. "And our best analysis confirms that there has been no pheromonic change."

"I'm not going to be better than your best analysis," I said.

He finished the last drop of coffee. "You have a very special eye, so to speak," he said. "You may notice something—regarding the pheromones, regarding something we have not even considered. We know your reputation, and we would like you to examine the situation."

"On Langatiar," I said.

"Certainly. Your expenses will, of course, be fully covered—"

"It's not a question of expenses." I could get there, after all, the Hell of a lot cheaper than he could.

"There will also be a fee," he said, and I thought for one entire second about the money that had been spent on investigation, on sending Horbuck to Earth, on bribing whoever had been bribed to find me—not to mention the cost of that damn hat, black tie and tuxedo.

"Fee," I said, smiling over my Gimlet.

"Payable, if you like, without the knowledge of any Comity official."

I thought about the Comity Income Assessment Board for a bit, but it was spoiling my digestion. It occurred to me that Horbuck's fee would allow me not to think about that particular assemblage of thieves for some time to come.

I finished my Gimlet and felt a good deal better than two Gimlets are entitled to make anybody feel. Then I told Horbuck I'd be on my way, shook his hand, saw him out, and instructed both Robbies, and my Totum, to start packing, and sealing the house.

Langatiar is a nice place, if you like the combination of large cities and smelly swamps, since all of their large cities are built in, or occasionally on, smelly swamps. There isn't much else on the planet except a desert belt (in which the natives don't live, though the deserts support some insect-sized life I never had to have much to do with, and seven varieties of what the natives call snakes, and I call small worms) and a lot of water. There are seas, oceans, lakes, rivers, pools and everything else you can think of. Langatiarans don't exactly swim, but more or less outboard-motor their way around all this water, ejecting what passes for air from sealable holes at either edge of any face of their vaguely pyramidal shapes. They seem to get a lot of fun out of it.

The water, of course, isn't H_2O. The air isn't anything humans would consider air, either. Let's not go into it, but I wore protective suiting, helmet and all, every minute I was on the planet.

Luckily, a lot of the natives speak what they think of as Standard. With patience and a good ear, you can get one word in three. They swear any difficulty is due to the damn helmets human beings have to wear. I doubt this.

I'd spent the time traveling leafing through a stack of reports Horbuck had given me. The reports told me nothing Horbuck hadn't, but they had a lot of figures in them, and the negatives looked a lot more reassuring. I couldn't think of anything much to do that hadn't been done, so I got a current map of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

planet, picked out the largest city I could find, and decided to spend some time interviewing natives.

Here's a sample interview, slightly cut in order to keep you from falling over with boredom:

"Mind if I talk to you?"

"Why should I mind?" (I'm putting the native speech into Standard, which is what they all claimed it was. That particular sentence came out, as near as I could get to it, as: "By . . . shdi find?" After a while you begin to get an ear for this sort of thing. But only one.)

"What's your name?"

"Mammet d'Rogurn Fmil. That's the way I say it for foreigners."

"Great. I'm Gerald Knave. Listen, Mammet—"

"Let's be friends. Call me Fmil."

I shrugged. I was standing in a public eatery (natives don't have chairs) talking to a jellylike pyramid with a shell on its top. Why not? "Fine, Fmil. Great. Mind telling me what you do for a living?"

"Why should I mind? I box vargas."

"Enjoy your work?"

"Well, it's always different, you know? No two vargas the same, no two boxes different. So there's always a little compensating to do. You know how that sort of thing can be."

In fact, no. I wasn't even sure what a varga was, though I knew it wasn't any part of the trade goods the planet sent to Earth, and other places. It wasn't one of the standard foods or drinks, either.

Maybe, I told myself, it was a bed. What a bed for a pyramid made of jelly looked like was something I tried fairly hard to picture, but I didn't arrive. I wondered about a bed for two pyramids made of jelly—if they had double beds; I had a lot of details about their sex life, but whether they enjoyed it in bed, while swimming or while jumping up and down (and didn't that just make a picture?) was something I never did get entirely clear.

Not that it mattered, I told myself. Though you never know what matters until it's too late . . .

Maybe it even matters what a varga is. Maybe, some day, I thought, I'll have to know.

But right then didn't seem the time to ask.

"Sure," I said. "Interesting sort of work. Demanding."

"What work ought to be. Dull work, you just get sleepy. They have to pay you more, to keep you interested—but what good's money if you're sleepy all the time, I ask you?"

I shrugged. It's not a native custom, but the natives had been meeting a lot of human beings lately. "You trying to investigate us?" Fmil asked me.

"As a matter of fact, yes," I said. "But I'm not a scientist. I just want to know how things are."

"How things are, they're pretty good. I got work that keeps me interested, I got time enough to swim, time enough to drink, time enough to fantasize. When I can find a good group, you know."

I did know about that. The way human beings (and a lot of other races) have books or tapes, films, 3D and so forth, the Langatiarans had fantasizing. Get four to ten natives together, and one

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of them would collect the others' attention and say a word. Then another would add to it. Before long, you had a whole story, shared and believed in by everybody in the group.

It was a little like that old gimmick where somebody starts a story, and the next person has to add to it, and so on until it either gets finished or breaks up in too much strain—but without the competitive aspect. A little bit, only not very much. About as much as the Langatiarans looked like people.

"And sex?"

"Maybe. If I get interested."

"But you haven't been getting interested."

Fmil shook a little. Shrug-equivalent, maybe, or an effect of nervousness; Langatiarans were big on modesty, within reason. "If you must know," he said, "not lately. No particular reason. Maybe I just haven't seen anybody who appeals to me."

"Tell me," I said, "has anything unusual happened to you lately?"

"Not a thing," he said. Without a shake. "Just haven't been interested. There's lots of other things to do."

Lots, I agreed, and bought him a drink of what I had begun to think of as Blended Yuch, and had the answer right there in my hands, so to speak. He'd told me everything any Survivor should have had to know.

I think I even knew it, right there and then.

Only I had no idea what it was he'd said that made sense, or what it added up to.

I did what I usually do in a case like that: I put everything into the back of my mind and tried to forget about it. The back of my mind is a lot smarter than the front, and once in a while, if I can convince it that I don't care what it does, it will toss me an answer out of sheer boredom.

But this one was hard to forget. An entire race was going to become extinct—not because it had succumbed to some disease, and not because somebody had been caught playing with those toys that made large, toadstool-shaped clouds in the sky. (It isn't as easy as you might think to wipe out a planet with atomics. But it can be done.) This race was going to become extinct because sex had stopped being interesting.

Which was ridiculous.

Maybe sex with a jellylike pyramid wasn't interesting to me—though it had its points, purely as an intellectual exercise: I mean, after all, *how?*—but it had to be interesting to other jellylike pyramids. They were a two-sexed race, just like people. And sex was interesting to people, wasn't it?

Well, to most people . . .

Most of the time . . .

I talked with some more people, and I built myself a tower of conversations that all sounded as casual and as meaningless as the one I'd had with Fmil.

And then I took a deep breath and headed over to Ravenal. I never go there if I can avoid it; the place makes me feel inferior.

Unless you own a Nobel prize, or equivalent, it will do the same for you.

People think Ravenal is built rationally, and maybe it is. But *rational* and *logical* are not the same word, and the capital city—also Ravenal, and why

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

not?—isn't laid out in a perfect grid, and the buildings aren't all the same height, and the streets aren't all numbered.

It's built for human beings, which means it's part city and part park, and all irregular, and reminded me, wistfully, of my little house overlooking Centaur's Park. All in all, it's a nice place, and I was in one of the nicest parts of it, a meeting room in one of the Central Decision buildings—five white stone-like jobbies built from six to ten floors high, and just one square in length, one square in width. They were scattered around the city, and they were all crammed full of amenities. I began to see why Horbuck had been able to talk about my fee so casually. Money was no problem on Ravenal. If you have a community of people who keep inventing things—from medical techniques to star drives—it isn't awfully likely to be.

And while they hadn't flattened out the boom-and-bust cycle (if they did, it would flatten out everywhere; somebody in Economic Statics or Social Statics would patent the damn thing and start selling it to every planet that had intelligent inhabitants), even the bust phase was a lot less painful on Ravenal. A Depression, to these people, meant doing without the third flycycle.

The amenities included small parks, inside the buildings. A few preSpace cities had tried that, but always on the ground floor or the ground floors, for obvious reasons. On Ravenal, it didn't make any difference: they were far enough advanced for tree-trays of virtually any size, anywhere.

So the central meeting room (on the fifth floor of this particular Central Decision Building) had vines growing up the walls, and a tree at either side of the main entrance, as well as trays of flowers and fruit scattered here and there.

Nice. The surroundings tend to keep everybody calm, partly because plant life will do that to a lot of human beings, and partly because they were so damned expensive. Money is a fantastic calmative.

Horbuck was there, of course. So was the only member of Ravenal Scholarte I'd met before: Charles Hutson Bellemand MacDougal, who had taken part in my Toadstool Sinfonia a few years before. I think he was there to put me at ease, which that smile of his nearly did.

But the sheer brains in the room began to get to me, after a while. There was Horbuck and MacDougal and Artyr Magnusson, the ion-effects expert, and six or seven biologists and biochemists, whose arguments I couldn't keep track of, and a couple of experts on Langatiaran society.

I did get something from the experts. I found out what a varga is. I see no reason to tell you about it.

After half an hour, I was feeling very inferior indeed. After an hour, I was feeling a lot worse—and a lot better. More depressed, but less inferior.

These people, after all, were asking *me* for help, not the other way round.

That made me feel less inferior. What kept me feeling depressed was that I knew I had help to offer, but I couldn't figure out what it was.

The back of my mind had, apparently, taken a couple of weeks off to (as I heard a magnificent maniac say,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a while back) "commute wit' itself." Or something.

Horbuck was laying it out: "There is no chance, absolutely no chance, that a biochemical imbalance of some sort has been created. The exchange patterns in blood samples would differ by a significant fraction if there were any hormonal changes due to biochemical changes—"

One of the biochemists stopped him—a tall, stately woman named Devera Shure. (When I'd been introduced to her, I'd asked her: "Are you certain?" and gotten the palest, remotest smile I can recall. Nobody likes the old jokes any more.) "Hormonal?" she said.

"Hormonal-equivalent," Horbuck said. "You will allow the term?"

Shure nodded. "For lack of proper description."

I put in my own two cents. "What would a proper description be?"

"As there are no gland secretions per se—there being no glands per se—there are no hormones. There are localized biochemical exchange sites, which appear to be bounded by flesh changes or, in one case, by a gravitic differential—the site can only exist to a given height on the Langatiaran body. These sites appear to regulate the flow of ions throughout the body."

"In the blood stream," I said, and she frowned at me.

"There is no blood stream. There is generalized ion flow, patterned in terms of flesh, muscle, liquid storage, and —well, bone-equivalent, though there is not much of that, and almost all is, to put it in simple terms, cartilaginous."

"In any case," I said, "all this means nothing, because there are no changes we can track down."

"None whatever," Horbuck said, and looked at Shure, and she nodded.

"There are no pattern systems equivalent to the blood stream or the musculoskeletal system," she said. "There are associating muscle systems, and associating cartilaginous systems. A generalized system doesn't exist."

I blinked. I was hearing something that didn't make sense. "Then what makes two Langatiarans alike? Or even similar?"

"Constraints on the associations," Shure said, exactly as if it meant something. "There are systems-of-systems, so to speak, which are themselves consistent. You have noticed that the triangular form—properly speaking, the pyramidal form—of the natives is a constant."

"I noticed they had eyes and mouths, too," I said. Ears and noses were sealable openings, but even those seemed to be located up near the top along with the ring of teeny eyes and the single immense mouth a bit lower down.

"Naturally," Shure said. "They do have a nervous system. There is a nervous-system pattern. It has been theorized that no living being can exist, above a certain level of complexity, without such a pattern. The eyes and other such primary sense organs are located near the brain, which is near the upper fifth of the pyramid for logistic reasons—shortest average neural pathway, that sort of thing."

I had no idea what that sort of thing was. Again, it didn't seem the time to ask.

"There is a brain, then? A specific

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

piece of tissue selected out for neural function?"

She looked at me as if I were below a certain level of complexity. "Of course there is a brain. In any intelligent species, determinate localization of neural function has taken place."

I forged doggedly ahead. "And they do their thinking with it, and their feeling with it? I mean, their emotions. They do seem to have emotions."

"They are very human," Shure said. "Their emotional life is mediated both by the—the hormonal-equivalents, and by the brain itself, just as in humans. The oldest parts of the brain appear to be—"

I said: "Hold it. Say that again. The oldest parts of the brain?"

"Of course. Just as in humans: the rhinencephalon can be traced back further than mammalian life."

"Lizards," I said.

"Possibly beyond." I'd heard her rhinencephalon called the smell-brain, but I did know about its existence even in lizards. Maybe it made me a point on the scale of sufficient complexity with Devera Shure.

And maybe not. She didn't sound as if it had.

On the other hand, what did it matter?

I had my answer.

"There are older parts of the Langatiaran brain?"

"The below-brain, so to speak, is establishably older than the above-brain; and of that one section appears to be older still. That section—"

I said: "Hold it. Call for an anatomist. I've got some detailed questions to ask."

"Anatomist?"

"Anatomist," I said, and when one came I talked with him—getting Horbuck to translate from Technical when necessary and possible—and told the assembled minds of Ravenal that I had their answer.

"And it's certainly being done by a race we haven't met," I finished.

Shure said: "Why do you say that, Mr. Knave?"

She sounded positively respectful. I said: "The only race advanced enough to pull this particular trick is the Kelans—who wouldn't. They seem to be in favor of the survival of other races. Evidence: we're all still here. No, this must be a new development, by a new sort of being."

"A new sort—" Horbuck started.

"And you did say there was some notion that this had happened before?" I asked him. He nodded. "Search back along that line—from Langatiar to the place you aren't sure about—where a race really was made extinct, just wiped out."

Charles H. B. MacDougal smiled at me. It still felt like two drinks in a row.

"Use the two sites as the centers of expanding spheres—with most attention going to that part of the spheres outside explored space. An improvement merely. I am sure we'll find them."

So was I, when I thought about it.

Which is why I'm writing this.

It was all (as Holmes always tells Watson) very simple.

Every biochemical clue, every electrochemical clue, had gone into the mist. It was absolutely certain that there had been no such tampering; and it was as certain as it had to be that there had

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

been no mass psychological effect. I'm not sure I believe in anything like that, either.

And all it needs is one exception . . .

No. There was an electrical field, just big enough to affect the deepest part of the Langatiaran brain.

If there's widespread impotence (or whatever the Hell its equivalent is among jellylike pyramids, and I am not at all sure I want to know), then there is also widespread panic, and people looking for a cause, and people working on a cure, and all sorts of damned things.

But if there is widespread lack of interest . . . then there's lack of interest. By definition, more or less.

People—and the Langatiarans are people, in any sense that counts—have sex not because they can, but because they want to. And they have children not because they can but because they want to. (In the most general terms—and the FemLibs will hate me, because they always do, but the terms can get just this general—this is true even without birth control—or equivalent for pyramids. They'd rather have kids, or the chance of kids, than be celibate.) People want more people to be around, even after the original people are gone.

This is not a wish that makes any sense. Call it something fancy like "preservation of the race" and it makes no more sense; it simply is. It is what people do, and it is why there are always more people around to argue about preservation of the race. All people—human beings, Langatiarans, Kelans, and sixty other sorts. Including at least one sort we haven't found yet.

But we will.

We turned off the Langatiaran field, of course—or, rather, put up a force-screen that shut it out of the planet.

The Langatiarans are busily making new Langatiarans. Just as usual.

But somebody—some unknown race—is going to know that.

Somebody started that electric pattern going. (A team of explorers found the generator, on a remote section of the planet. It was a rounded-corners box, about one foot by one foot, and when touched by a probe it dissolved, like a sugar cube. No ill effects noted, and we still have the screen up just in case there are more one-by-one boxes somewhere on the planet. But it's gone, leaving no clues.)

There is a race somewhere which wants to own the universe, all by itself. It doesn't want other beings out there cluttering things up.

And it especially doesn't want other beings interfering with their nice clean removal plans.

So it seems logical that we'll find them, all right. Because they already know where to find us—the Langatiaran operation was scarcely a secret.

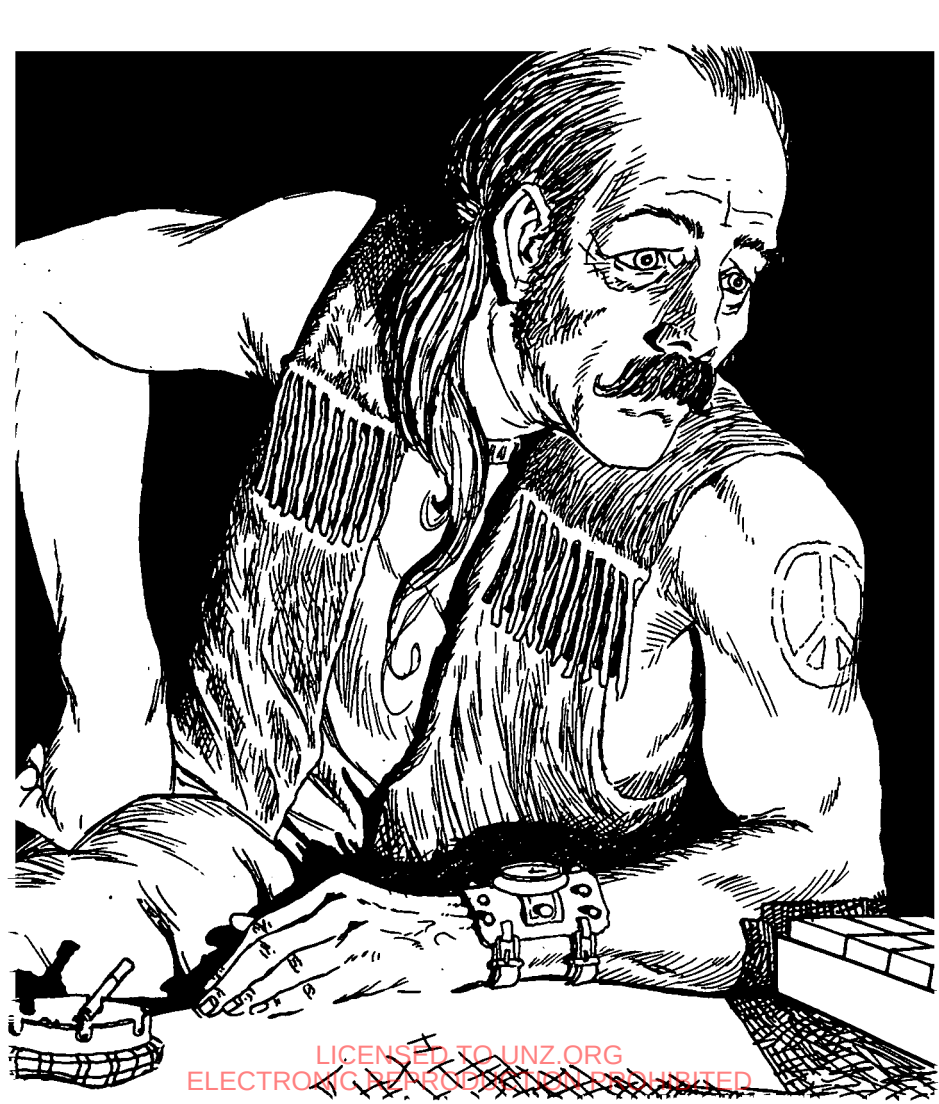
And they'll want to turn us off. It seems very likely that they can do it.

My advice to you is very simple: If you find yourself getting uninterested in sex, fight it.

And if nobody you know is interested in sex—and, of course, you are not surpassingly ugly or very weird—then go to the Comity, right to the Emperor at the top, and start hunting for electrical fields.

I'd go myself—if I could be sure of avoiding the Income Assessment Board. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

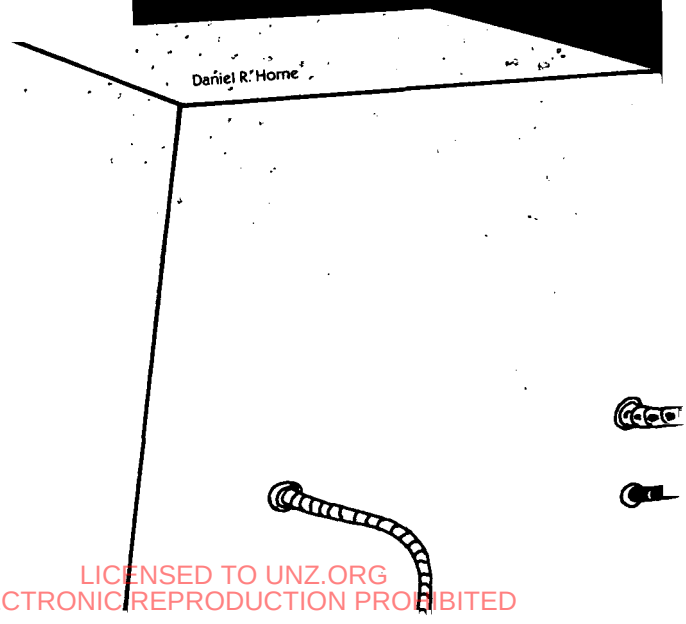


LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ALYST

Rick Cook

ication is the key
many things—
nd sometimes
it works best
if it's done
sneakily!



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

They were doing a '60s retrospective that morning and all the way to work Paul Henderson had to listen to the anthems of his youth.

The station was playing the music because some rock star had died, but Paul had turned forty-two over the weekend and it seemed to him that more than a singer had passed on.

Goddamn, he thought as he surveyed the freeway and the packed ranks of cars winding through the smoggy hills. *We were the ones who were going to change all this. Shit!*

The station dug deep into its library and played songs Paul had forgotten by groups he only half remembered: The Animals, the Byrds, the *old* Jefferson Airplane, Country Joe and the Fish. Songs that exalted being young and promised to change the world.

As he inched his way through traffic and the music poured out of the Volvo's stereo, the memories came flooding back. He remembered the nights sitting on the floor smoking dope and staring at black-lit posters that hinted of great and cosmic secrets to be deciphered only by the truly stoned. The interminable committee meetings at the Campus Peace Center. The half fearful/half exciting classes on what to do when you were arrested. The exhilaration of marching shoulder to shoulder with thousands of others, determined to eradicate injustice and reorder a country's priorities.

He remembered the burning anger at a nation gone wrong, sacrificing its youth in an unjust and genocidal war half a world away. He remembered the bone-deep resolve to change a fundamentally corrupt system.

He remembered, but that was all he could do. Somewhere between twenty-three and forty-two all the feeling had leached away.

Shit! he thought, his eyes misting. *Is this what it means to grow old?*

Not that he was doing badly, he told himself a little desperately as the station switched to a stream of commercials. It wasn't like he was in defense or aerospace. He had a managment job with an equity position in a hot software company and a chance to do a lot better when the company went public; a condo in a good neighborhood, and a solid second marriage with liberal visitation rights with the kids from his first. No, he was doing all right.

And now a chance for a real coup. He looked down fondly at the floppy disk file in the passenger's seat. If he handled this right he might be a millionaire before he was forty-five.

Then the music started again and Paul Henderson's million turned to ashes in his mouth.

Ah hell,'' he thought, *we were idiots to think we could change it all. Better to take what we've got and try to reform what we can.*

''Where have all the flowers gone?'' the radio warbled as he pulled into the parking lot and Paul resolved to increase his contribution to the Union of Concerned Scientists. Maybe he could get into the next peace demonstration, if it came on a slow weekend.

Once away from the radio and its cargo of electronic nostalgia Paul's mood lightened. *Come on, boy*, he told himself as he came up the walk. *Get back in the present. This is important. It's for the big score.* By the time he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

reached the boardroom, he was up, fit and ready for action, with only a faint dull ache somewhere deep inside.

The meeting moved along quickly. Andy Parker, Digiware's president, CEO and founder, was a good ten years younger than Henderson, but he ran his business sharp and tight. One by one the agenda items came up and were crisply disposed of. When Henderson's turn came, he was up and eager.

"As you know gentlemen, games are coming back," he started smoothly. "Digiware has been offered an exciting new product from an independent designer. But there are a couple of points that need approval."

"I don't think we can authorize more money," cut in the venture capitalists' representative, a sharp-faced man in glasses.

"It's not a matter of money, Mr. Hanifen," Henderson assured him. "No, these are just a couple of, ah, procedural matters."

"Such as?"

"Well, as you recall, we have a policy of not purchasing any program not written in the C language and accompanied by source code. This program is written in machine language and the source is not available."

"What language?"

"Machine language."

"You mean assembler," Ashlander, one of the engineers, corrected.

"No I mean machine language. Ones and zeroes. If there ever was an assembler version it has been completely buried under the author's hand optimizations."

"Now let me get this straight," the Ashlander said. "You want us to buy a program that is not written in a high level language, isn't modular or structured and with no source code? It would be absolutely impossible to maintain."

"It's not that bad," Henderson said. "Since it is a game we won't have to do the maintaince we do on business software. Extensive play-testing has found no bugs and the author is a respected designer with an excellent track record."

"What sort of game is it?" Moran from PR wanted to know. "Another Pac Man?"

"No. Market research shows arcade games will be passé this cycle. It's an economic simulation."

"Sounds dry," Moran said dubiously.

"I can assure you it is anything but dry. Our play test panel found it fascinating. I admit I whiled away several hours playing myself." Actually Henderson had spent all weekend glued to the screen, palms sweaty as he battled his way through the intricacies of the game. He opened his attaché case. "I have a copy here if you would care to see it demonstrated."

Parker nodded and Henderson inserted the disk in the computer at the foot of the conference table. The screen blanked for a minute and then came up in a dazzling multicolored display.

WELCOME TO YOUR WORLD the letters of fire blazed across the screen. In the background was a panoramic landscape. Mountains ran down through forested hills to rolling plains and a mighty river meandered out to meet the sea in a broad bay. IT IS YOURS TO DISPOSE OF AS YOU WANT. ONLY REMEMBER: YOU MUST LIVE

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WITH THE CONSEQUENCES OF YOUR ACTIONS. The letters and the land beyond shimmered with life and jewel-bright colors.

"Nice graphics," Parker said approvingly.

"Would you care to try a quick run-through, sir?" Paul asked.

Parker shook his head. "I never play games. Perhaps one of the others."

"I'll give it a try," said Ashlander, pulling the mouse across the table to him.

"I can't seem to get past the village stage," Ashlander said after three attempts."

"Try cooperating with the other clans," Henderson suggested, drawing on his weekend's experience. "You get further if you work together."

"But if you try to cooperate they can attack you and knock you back to square one," Ashlander objected.

"They can," Henderson agreed, "but in the long run they do better if they don't. In this game you've got to trust the other players."

On his fourth try, Ashlander united his village and the surrounding ones into a city-state. By that time the board members had left their chairs and were clustered around the screen, watching intently.

"Great graphics, really great," Moran murmured approvingly.

"It gets better," Henderson said. "Would anyone like to try the next stage?"

"I believe I will take a turn at it," Parker said, sliding into the chair as Ashlander stood up to stretch.

Aided by Henderson's suggestions, the president of Directware advanced through the City-State and Feudal stages quickly. On the fifth level, the Machine Age, Parker attempted to build a monopoly by driving his competitors out of business. Because of his strong economic position and his ruthless push to hold down his costs he seemed to succeed. But by the fifteenth move a series of reverses had brought him to his knees.

"Bad luck," grumbled Parker, shifting in the chair.

"Uh, no," said Hanifen. "Here." He reached over and hit the "replay" key to walk through the sequence. "You overworked your capital to establish a monopoly." Another keystroke and the screen filled with multicolored charts illustrating the round. "Here, you see, you didn't have the resources to invest in new technology, so your nascent competitors reentered the market as lower-price producers. By the same token, your efforts to lower your labor costs resulted in a lower-quality labor force, higher turnover and constant labor trouble."

"That usually happens" Henderson explained. "If you try to control too much, you can lose everything."

"Subtle," said Parker grudgingly. "Very, very subtle."

"The whole game is like that. You have to watch what you are doing and simple strategies never win at the higher levels."

The board played seventh level, the Information Age, as a team. By pooling their strengths they did better than they had as individuals, but the problems were much more complex.

"It's the uncontrollable costs that are

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

killing us," Parker said frowning at the charts. "We're paying too much in taxes and interest so we can't generate the capital we need for investment. Our foreign competitors are eating us alive."

"Are those costs actually uncontrollable?" someone asked, thumbing through the documentation. "If I read this right, we can make government policy too. If we reduce the deficit and cut the number of unemployed and underemployed, we can reduce interest rates and taxes both. What if we increase job training programs and offer government-supported child care to put some of these unemployed people to work?"

"That only increases taxes," someone else protested.

"All right then, let's get the money by cutting somewhere else, say defense."

"Preposterous!" a third person snorted. "You'd have to slash defense to the bone to support a program like that."

"Well, let's see," said Hanifen, punching keys.

"Uh, gentlemen," Paul put in, "I did promise Mr. Ozawa a decision by this afternoon."

"What?" said Parker, looking at his watch. "Good heavens, it's nearly three. Howard, have my secretary send out for sandwiches, will you? And yes, Henderson, you call and tell Mr. Ozawa we will agree to his terms." He turned back to the screen to watch the latest set of graphs come up.

"They bought it, Jerry. You're going to be rich!"

Jerry Ozawa took the news of his impending wealth calmly. There were streaks of grey in his ponytail and a few lines around his eyes, but otherwise he looked just as he had when they had served as marshals for the Ad Hoc Committee peace march two decades before.

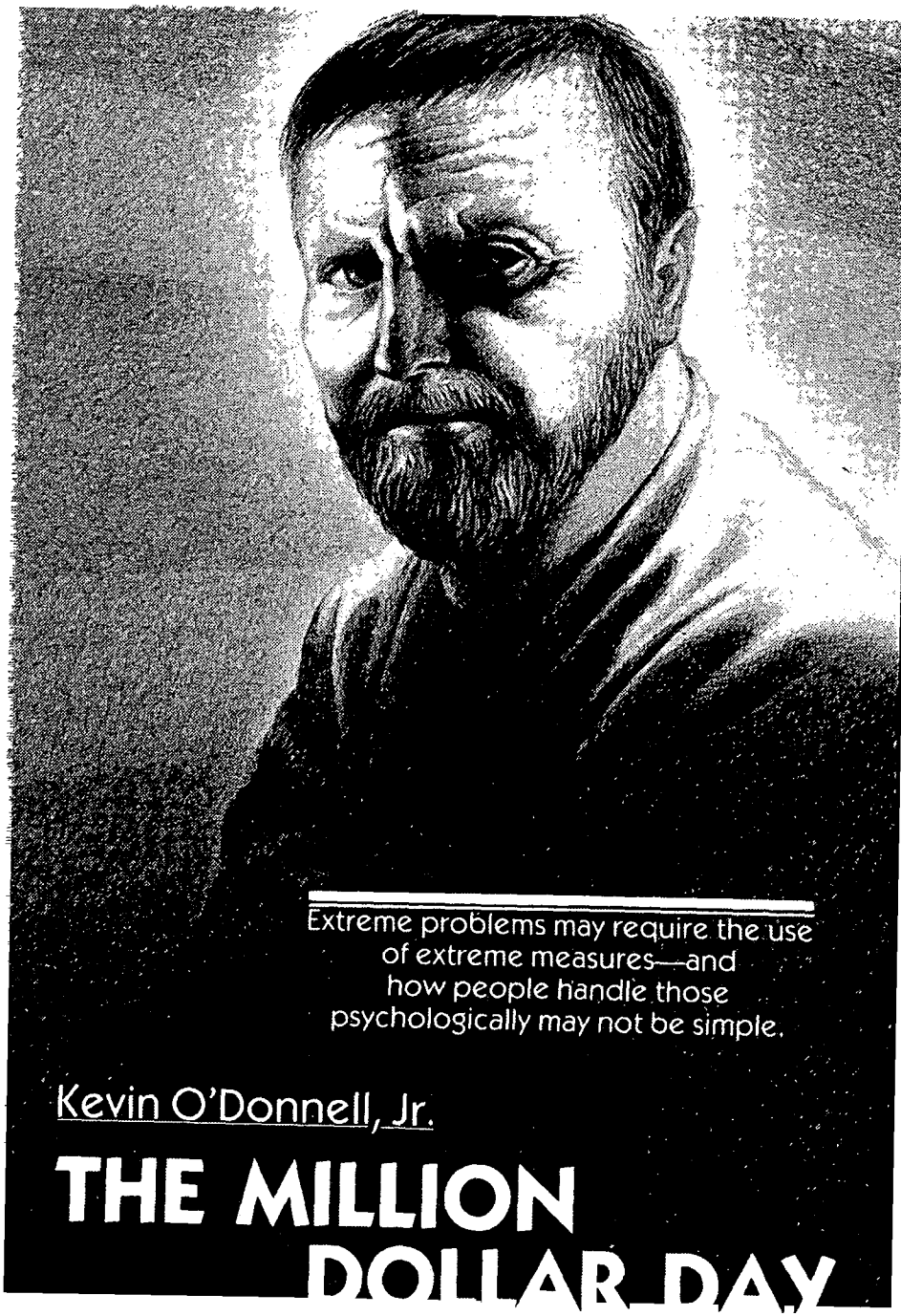
Henderson toyed with his wine glass. "It's funny how things work out, isn't it?" he asked, reminiscing. "When we were in school we were going to change the world. No more poverty, no more war. We marched, we fought and what happened? The world's still as rotten as it ever was."

"We went about it wrong," Jerry said practically. "We tried to change the world without convincing people deep down that it needed changing. We never showed them how we'd make the world better. So they listened to their prejudices, not us."

"Well yeah," said Henderson uncomfortably. "Anyway, here we are twenty years later sitting in a fern bar doing a multimillion dollar deal. I'm an executive, you're a programmer and all that changing thé world stuff is far, far behind us."

Jerry Ozawa smiled. "Oh not so far, brother. Not so far at all." ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



Extreme problems may require the use of extreme measures—and how people handle those psychologically may not be simple.

Kevin O'Donnell, Jr.

THE MILLION DOLLAR DAY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Tour 49 Day 1

Frank Nikolaites, known as Fradero, peered into the intercom that linked Sirius Wing with the Quarantine & Relay Station's main offices. "Jeff, I'm begging you—"

"I know." The pleasant-faced man wore the steel-blue uniform of the Bureau of Customs and Quarantine. "And it makes me feel like real slime—"

"Good!"

"So cut it out. Fradero, your last tour was a stonecrusher; you need a vacation. You haven't had one in what, twenty experienced years? Stay inside. We'll set the timer for two weeks of R & R. Catch up on your sleep. Another four or five seconds won't matter out here."

"No, Jeff. Get somebody else to Host—"

"There *is* nobody else. And the line's backed up to—"

"What about Horatio? Give him this group; I'll take the next."

Jeff winced, and looked away. "Horatio's dead. Bad stroke. Rigel Wing's MobileMed couldn't reach him in time."

"You don't understand. My father and brother are boarding and they—"

"Won't recognize you. They saw you what, two months ago universal?"

"Six weeks," said Fradero. "But that's not—"

"You were eighteen then. Now you're forty-six—"

"Damn, Jeff, it's not that! It's that. . . . They weren't supposed to leave New Mayo till tomorrow universal, when I'd have been long gone. I've based my *life* on their not coming home till tomorrow." He took a deep breath. "Please. I'll Host the group if you'll hold my father up another five, six hours. Just till I retire and walk the Web home."

The BCQ officer shook his head sadly. "Fradero, that's a court-martial offense. And there's a war on, remember?"

"Of *course*, I remember the damn war! The plagues got my—"

"Don't shout at your superior officer. Run your systems check. Board your Guests. And keep cool. Do it, Fradero. Now."

"Right," he said sourly, and cut the connection. He pushed back from his desk, there in his office in the Sirius Wing of the Quarantine & Relay Station a billion kilometers darkside of Pluto. He glared at his chrono. "Damn. Damn, damn, damn! Why did they have to come back early?"

The chrono said nothing but:
Universal Time—4 Jul 2204 1300 GMT
Experienced Time—18 Jan 2232 0937

He got up, went to the bathroom, and leaned on the sink. The mirror showed weary brown eyes sunk in a bearded face that grew gaunter with each experienced year. "Tomorrow, and tomorrow, and tomorrow . . ." He smoothed his thinning hair and activated the armor.

A silver sheen coated him from head to foot, then billowed outward to empillar him in shimmering smoke that conferred authority, anonymity, and protection. Requisites for anyone who offended the powerful to protect the human race.

Ebony letters, glowing through the smoke at chest height, spelled the name "Fradero." Once he had scoffed at the need for a workname; now he appreciated its cloak. He had made hundreds

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of enemies. They realized the necessity for Quarantine, so they would cool down, eventually—but not by "tomorrow." Thank God they had no way to identify him.

Moving to the command console, he ran the systems check. *Please let something crash.*

The computer queried Sirius Wing's life-support systems and reported:

POWER	ON	OK
AIR CYCLERS	ON	OK
WATER	ON	OK
FOOD	ON	OK
GRAVITY	ON	OK
RECREATION	ON	OK
AIR MONITORS	OFF	?????

Hope thrilled in him. He leaned forward, touched a button—and the power consumption levels jumped as the air stream monitors kicked in. Seventy-three machines began sampling exhaust air before it hit the purifiers and oxygenators. Capable of detecting and identifying one part per quadrillion of every substance known to humankind, and of reacting with alarm to any unknown substance, those machines kept humanity alive.

The display changed with a shy flicker:

POWER	ON	OK
AIR CYCLERS	ON	OK
WATER	ON	OK
FOOD	ON	OK
GRAVITY	ON	OK
RECREATION	ON	OK
AIR MONITORS	ON	OK

He slapped the writing surface of the console. The damn monitors worked after all. Halfway to retirement and things had to go wrong.

He had expected to retire at seventeen hundred hours on 4 July 2204 Universal Time. Late spring, early summer of his seventieth year, Experienced Time.

After withholding taxes, BCQ would credit his account with a million dollars, give or take a few cents. Not bad for a universal day's work, even if the day did happen to run a few hours over forty-eight apparent years. And more than enough to pay for Abe's treatment.

Fradero's term of service would also entitle him to a pension of $2,500 a month, plus $947.38 more in Social Security. He could live comfortably on that almost anywhere.

Assuming his father didn't kill him, first.

Important people passed through Quarelay Station, powerful people who demanded deference. To anticipate their every desire, a BCQ Host had to know their histories and habits well. The Bureau issued a preliminary Guest list one tour in advance, and expected the Host to research his Guests on the Station's info-trieval system during those six experienced months.

That list had sparked Fradero's plea for replacement, but it had also helped him prepare emotionally for what he faced. Bracing himself, he opened Sirius Wing's archway. He stepped onto the concourse—and nodded to his own father, who guided Fradero's teenage brother to the counter in a grav-chair. Fradero bit his lip.

Abraham Lincoln Nikolaites wore a blue heat blanket wrapped around his thin shoulders. Beneath it, straps to hold him upright crisscrossed his chest. Disease and emaciation made him look six, not sixteen.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Some considered Abe lucky. He had caught, but survived, one of the plagues released in Bysk's only successful bio-attack on Terra. His bones were melting into cartilage, and his system had reabsorbed most of his brown hair, as well as his fingers and toes, but he had survived. So far.

Fradero remembered the healthy Abe, high school track star and baseball hero, Hermes in cleats. The kid had *owned* center field—and the spectators, too, when their applause at yet another "impossible" catch flushed an aw-shucks grin out of him.

And now he rode a grav-chair. With a wan smile, he tried to sit a little straighter. His green eyes reflected the pain the movement cost him. His smile held steady.

Fradero blinked hard. Abe had not even heard about the Condwall-Abbey treatment—the researchers had worked within a Time Acceleration field—yet he would not give up. Truly his father's son.

But weren't they both? Condwall and Abbey had released their findings yesterday, universal; they estimated that the treatment would cost close to a million dollars per patient. Frank Nikolaites had applied to Quarantine Management School one hour after reading the news article. He had reported to his first class that morning, universal—twenty-eight years ago, experienced. Because he, too, was his father's son.

Thomas Jefferson Nikolaites had expended his entire fortune pursuing a cure. To pay for the trip to New Mayo, he had sold his company, his house, and the last of his late wife's jewelry. Only forty-four years old, he had more lines in his face, and grey in his cropped hair, than men twenty years his senior. Though he still moved with quiet dignity, his head held high, a subtle tension in his bearing said the trip had failed.

Fradero had dreaded this moment for all of Tour 48. The Byskan plague had killed his mother, his big brother John, and his baby sister Indira. Hosting Abe would awaken ghosts he could not acknowledge.

He had planned to pay for Abe's treatment in advance, leave an explanation at the house, and disappear before Abe and Nikolaites returned. Nikolaites would rage—and mourn—but Abe would have a chance, while Fradero would never have to confront his father.

And now here they were, a universal day early.

A vagrant thought crossed his mind. *I'm two years older than Father. He used to seem so impossibly ancient, so distanced from me by his years. . . .*

He had a job to do. Slipping his hand inside the cloud of his armor, he stroked his beard, took a deep breath, and waved the two forward. "Passports, please."

Through eyes as green as his son's, Nikolaites studied Fradero's smoky mask. His brows lifted as if in preface.

Fradero held out his hand. The armor hid its slight tremble.

"You sound familiar." Nikolaites gave him two plastic cards.

"You probably got used to the New Mayo accent, sir, and now you're hearing a fellow New Englander again."

"What part of New England?"

"Sorry, sir, I can't be more specific."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Nikolaites thrust out his jaw. "Why not?"

"I'd be happy to explain it later, sir, but right now—" He gestured to the long line. "I'd like to get everyone processed."

"Eh?" He looked over his shoulder. "Ah. All right."

Abraham, meanwhile, had been reading Fradero's name. He opened his mouth to breathe. He had no teeth left. "What do you think of my thauffeured grav-car, huh, Fwade'o? I got it pretty thoft, don't I?"

Sympathy clogged his throat. "Yeah. Yeah, you really do, Abraham." He dropped the slick cards in the deskslot; the screen blanked, then flashed CABIN I. "Your room is down this corridor and to your left, sir. Number One. The lock is keyed to your thumbprint. And the info-trieval terminal is cued with data on a procedure called the Condwall-Abbey treatment that might be of interest to you. It was announced yesterday, universal."

"Thank you." Nikolaites nodded tautly, then directed the grav-chair down the narrow, low-ceilinged hallway.

"Talk to you later, Fwade'o!" called Abraham.

"You bet, Abraham."

He watched them go. They would need special handling, but what could he safely do? He dared not spend much time with either of them. If his father grew suspicious, there would explode a scene which even in imagination brought a cold sweat to Fradero's forehead.

A sibilant hiss came from his left. He turned. Toward him stalked the Ngar'ang Ambassador, a four-legged, rust-furred carnivore two meters long and a meter and a-half tall at the shoulder.

"Good afternoon, Your Excellency."

The Grand Duke Ghra!nna twitched his whiskers and bared his fangs in a snarl. The micro-speaker hidden among the diamonds on his collar translated into flawless Oxonian. "We shall file a formal protest with your government. To cross twenty light years instantaneously only to spend the next six months in a cage is disgraceful!"

Twenty-four years of dealing with aliens helped Fradero stay calm. Excitement only worsened situations like these. "With all due respect, may I suggest that The Duke file that protest with his own government? Surely some minor functionary in the Ministry of Intergalactic Affairs was derelict in duty—" *was playing palace politics* "—by failing to inform a member of the royal family—" *and leading contender for the throne* "—of quarantine procedures here in the Terran System."

The Ambassador tossed his feline head and fixed Fradero with a cold orange glare. "It is not for bipedal aliens to discuss our government's internal affairs." Eight-centimeter-long claws emerged from their sheathes.

Fradero swallowed hard. The armor would protect him, but he hated for anyone to start the tour in a vile mood. One irate guest on the first day left a reek that lingered for months. He forced cheer into his tone. "Of course, Your Excellency, my apologies. You are in Cabin Number Two. I'll stop by shortly to see if the accommodations are satisfactory."

"My passport."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I must hold that until you depart, your Excellency."

The Ambassador snarled again, but moved off without further objection.

The rest of the processing ran smoothly. He greeted billionaires human and otherwise, a batch of rich retired athletes returning from a galactic tour, and businessmen from thirteen different planets. All had passed through Quarantine before, and if they did not exactly understand the procedures, they were at least resigned to them.

The screen flashed *FULL*. He tapped the key that would dump the final Guest list into Quarelay's main computer and made ready to shut the gate.

The intercom on his desk chimed softly. Jeff smiled out of the screen at him. "All set?"

Fradero's fingers scurried over plastic keys. Empty lines filled the screen. "All clear; no sniff of anything Byskan. I take it your monitors came up zero, too."

"You got it. But keep an eye open, anyway. They might have found a way of stretching their time-delay."

"Will do." He glanced at the desk chronometer. "Time to close up here. See you in a minute or two."

"Good luck."

He pressed the button. Two levels down, huge motors surged into life. The lights flickered briefly as the Time Acceleration field took charge. Fradero's section of Quarelay Station fell into a universe all its own.

Now the archway opened into blackness spangled here, then there, with the deathflares of single stray photons. It would open on nothing else for at least six months—and perhaps for longer.

* * *

Nikolaites called "Come in." The cubicle's metal hatch slid aside for Fradero. Before him, the Grand Tetons filled the wallscreen; soft music welled from invisible speakers. Despite the air scrubbers, the room so stank of sickness that he found it hard to breathe. At least they had dimmed the lights. He doubted he could bear the pain in his brother's face.

His father sat in the desk chair, back straight, shoulders square, palms flat on his thighs. He had an air of chilling self-sufficiency. An arm's length away, Abe lay motionless on the bed, apparently asleep.

Fradero licked his lips. "Did you find the information on the Condwall-Abbey treatment, sir?"

"Yes. Thank you."

Fradero blinked, surprised by Nikolaites's lack of reaction. Though experimental, the new treatment showed great promise. Why didn't his father exult? "Is there anything I can do for you, sir?"

Nikolaites cocked his head and stared at Fradero for a long moment. "Explain why you can't get specific about your hometown." He gestured to Fradero's armor. "And why that hides you so well."

He cleared his throat. "Quarelay Station was built to interdict Byskan plagues before they reach Earth. My job is to see that nobody destroys Quarelay trying to get out. And to . . . isolate anyone who shows any symptoms or sign of contagiousness."

"Isolate? How?"

"That depends, sir. I usually use longsleep." He gritted his teeth. He could not bring himself to say that if he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ever encountered symptoms or substances that the machines did not recognize, he had to confer not longsleep, but finalsleep. Better the pathologists fail to grasp the disease than the planet fall prey to another unknown plague.

"You must get a lot of people angry with you."

"A lot of rich, influential people, sir." He hesitated, then, but continued, half in quest of moral support, half in oblique warning. "People behave . . . differently, here. It's like they're free, in a sense, of their real-world roles. Some get um, bizarre. And I see it all."

"You see it?"

He gestured to the ceiling. "There are monitors—sensors—cameras everywhere. Everything shows on my console. The Guests know this at the start, but they put it out of their minds until tour's end. Then they can't believe I don't care. A few years ago—this morning, to you—a wealthy, uh, individual sobered up just before leaving and realized I knew all about his homosexual affair." Fradero shook his head. "I really didn't care—but I guess if *he* knew someone else's secret, he'd use it. So he tried to murder me. The armor stopped him. Then he swore he'd hire a killer. But no one knows my name, my face, my address—so I don't have nightmares. I can do my job. And that's the whole point."

"I see." Thoroughly disinterested, now, Nikolaites nodded. "How do your rules categorize my son Abraham?"

"Abraham? First, the Bureau is familiar with his case. We—" His voice failed him; he had to start again. "We know he's not contagious any more. And second, he hasn't tripped a single monitor, as he would have if he carried anything we should be alarmed about."

Nikolaites's eyes closed; his lips moved soundlessly. "Thank you," he said at last.

"Will there be anything else?"

The tired green eyes blinked open, then glanced away. "Mostly . . . just leave us alone. It's nothing personal, understand, but we're not in the mood for company. People have been poking and prodding my son for the last six weeks, and we've had enough. All we ask is privacy."

"I understand." Their luggage had been scanned, and they themselves had passed through half a dozen detectors, so . . . "Except for diagnostics with the MedMech, you can have all the privacy you want, sir."

"Oh, God!" Pose crumbling, Nikolaites dropped his face into his hands. "More tests?"

"It's only five minutes strapped into the machine once a week, and the few drops of blood it draws each time."

"I don't know if Abe has enough blood in him for that."

He wished he could reassure his father with a touch, but the armor would not permit contact that gentle. "It's a very small quantity, sir. And . . ." He lowered his voice in case the conversation had awakened his brother. "And it will keep you posted on Abraham's condition."

"Sweet Jesus." Nikolaites knuckled his eyes. "I don't need that. I know his condition. Six months. Maybe seven. Enough time to get home, see his family, and die."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A chill ran down Fradero's spine. "Die? But the Condwall-Abbey—"

"Abe," said Nikolaites, "isn't eligible."

"*What?*" He could not keep the outrage from his voice. "Why not?"

"Please." Nikolaites pointed to the door. "We wish to be alone now."

And Fradero had to leave.

A short, broad-shouldered man filled the office doorway. "Excuse, please, but I have an extremely important engagement—" He eased the left sleeve of his tunic back from a jeweled chrono. "—in three hours, I—"

Fradero registered the plump, smooth-cheeked face, and remembered: Wilhelm Teuler, Commercial Trader. *Not eligible?* He got wearily to his feet. "Don't worry, Mr. Teuler. You—"

The trader's voice tightened; no emotion escaped it but pleasantness. "I am addressing the Permanent Subcommittee on Trade and Tariffs at its specific invitation—"

"Believe me, sir, I understand. But don't worry. The time you spend in quarantine will not make you late. I can guarantee that."

"I am not clear on your meaning." He took a deep breath and let it out slowly. "The Subcommittee meets in les than three hours."

"Sir, your entire six months in Quarantine consume less than sixty seconds of Universal time. That's—" He shrugged, exaggerating the motion so it showed through his armor. "It's less of a delay than if you stop in the men's room before walking the Web back to Earth."

"Very well." The man clicked his heels and bowed. "I apologize. I am too easily upset. The doctor says it is not good for my blood pressure." He took a tablet from his pocket and slipped it under his tongue. "But I do not understand. Surely I have avoided all areas of high risk."

"One moment, please." He typed Teuler's name into the info-trieval terminal. Citing regulations never satisfied persistent complainers; it only let them argue the rationale for an exemption. To silence them one had to put the blame for their long stay squarely on them.

The screen flickered, then listed Teuler's points of call on his travels through the Mass Transmission Web. As Fradero skimmed the long itinerary (Terra to Luna to Mars to—) he nodded with growing dismay, and mentally appended the word "clean." Mars (clean) to Neue Munchen (clean) to Jenminsyingchyou (clean) to South Jerphia—

He smiled to himself. South Jerphia was not clean. It was, not to put too fine a point on it, filthy. "Well, sir, you did visit South Jerphia, whose quarantine procedures are, um—" He spread his hands. "—primitive? The Bureau has asked for a total ban on travel to and from that planet."

"I see. But you assure me I will nonetheless keep my appointment?"

"Absolutely. You—"

Fradero's console chimed softly, urgently. A red light winked in a corner of the panel where he had hoped never to see one.

Teuler peered over his shoulder. "Is something wrong?"

"Wrong?" Into that syllable Fradero put all the blandness he could muster. He gave silent thanks that the armor hid

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

his expression. "Nothing. It's um, time for some scheduled maintenance."

"I see." The commercial trader made for the door. "Then I best had let you get to it, yes?"

"Thank you, sir." He raised a hand in casual salute. The hatch closed. He slumped, trembled, and switched the computer from voice to keyboard/screen mode. To eavesdrop through a pressure hatch is difficult, but not impossible. The glow of his armor reflected from the screen, obscuring the letters; impatiently, he shut the armor down. Then, dreading the inevitable answer, he typed, "Confirm."

BYSKAN VIRUS DETECTED

"Danger of infection?"

NIL

He breathed again. "Concentration of virus in airstream?"

1/1,000,000,000,000,000

Right at the monitors' limit of sensitivity. "Quantity detected?"

1

A one-time event. The sensors had sniffed an individual virus going into the filters, and had not noticed another since. Or had they spotted it at all? Electronic devices made mistakes, at least when operating at that level of discrimination. A quick quiet burp in the power supply could bump a register from 0 to 1. So could a neutrino flashing through exactly the right point at exactly the right time. False alarm? Or cause for alarm?

"Carrier?" A futile question, but he had to ask.

UNKNOWN

Point of entry into airstream?"

GAME ROOM

Where else but the largest chamber in Sirius Wing? It looked more and more like a system error. "Record, reset, and resume," he typed.

RESUMING

He shifted the computer back into voice mode and stood up. His palms left damp marks on the metallicized plastic finish. Light-headedness made him wobble briefly, and his knees stayed weak even after it had faded.

If the monitors kept quiet for the rest of the tour, he could assume they had glitched this one time, and that he had nothing to worry about.

If this same situation arose again, though, he would start to sweat, because a Guest coming down with a Byskan plague would release a continuous stream of thousands, even millions, of viruses.

An intermittent, edge-of-scale concentration could only mean that someone had smuggled dormant or encapsulated viruses into Quarelay Station.

Fradero would have to find the smuggler—and execute him if necessary.

Day 7

The master fuse for the ventilation fans and the overhead lights in the corridor from the library to the game room had blown again. Fradero balanced on a ladder as he pried at the fuse box panel. Under his breath he cursed steadily and inventively, consigning both the station designers and the maintenance crew to any region of hell where the air conditioner's one defective part lies utterly inaccessible.

The Grand Duke Ghra!nna slipped around the corner in a swirl of bristly fur. "Where are my females?"

Fradero spat two sheet-metal screws into his palm and sat on the top of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ladder. "Assuming they boarded at the same time as Your Excellency, they're in the Women's Section."

"Why are they there and not here?"

"This side is only for males, Your Excellency." *As your courtiers should have warned you.*

"Guilt-ridden Terrans discriminating on the basis of sex? However can you justify that?"

"Some time ago there was—" He paused to settle on the right word. "—an incident. It wasn't the first, or even the hundredth, but it was the most unpleasant. When the Host attempted to intervene, the rapists assaulted him."

"Oh, come."

"His armor failed." Fradero let his shoulders rise and fall. "He lay in a coma in the MedMech for over six months, and required another four months' convalescence before he could even start to repair the Station. Since he was still alive, the software backups wouldn't assume responsibility for discharge. A few Guests tried to force their way out. They didn't make it, but did break important mechanisms. As a result, they all experienced a shade over two years in Quarantine. The recyclers provided sufficient food, water, and air, of course, but the temperature had risen to 55° centigrade by the end of the second year. Eight Guests died. The Service decided never to risk such an incident again. It improved the armor, rewrote the programming for the backups, and segregated the sexes."

With a disgusted hiss, the Ambassador ran his claws through his belly fur. "And just how do you deal with Kaharans?"

"Since even they don't know their next role until they come into season, we only allow one Kaharan into Quarantine at a time." He shrugged. "They don't like it, but how else can you deal with a penta-sexual race?"

The Grand Duke Ghra!nna bared his fangs. "Which brings us back to my problem."

Fradero eyed the Ambassador, then pinched the bridge of his nose. The Ngar!ang's pelt had thickened noticeably in just seven days. "Oh, no."

"Oh, yes."

"When?"

"Next week."

"But didn't you know you were due?"

"Of course I did!" Lashing his tail, he growled down near the sub-sonic. "I did not know that I would lack for such vital companionship. Our season lasts, after all, for seven of your months."

Fradero stared at the ceiling, willing his voice not to tremble. "I realize the disfavor with which Your Excellency might view my suggestion, but the station designers have provided that which might offer sufficient relief to maintain sanity."

The fur around The Grand Duke Ghra!nna's neck ruffed out; the micro-speaker popped and crackled as it attempted to translate the Duke's growl. "A machine? You insult The Grand Duke Ghra!nna with a *machine?*" A massive paw flashed. It slapped the ladder hard.

Fradero yelped. He threw his weight to his left to rebalance the ladder, but overcompensated. His shoulder hit the wall; the ladder's legs skidded across the floor. He fell.

Claws scoured armor. The Ngar!ang's

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

breath fogged Fradero's vision. "You miserable Terrans dare—"

"Your Excellency, we mean no offense!" With elbows and heels he scrambled backwards, talking all the while. "The machine is the best we can do for citizens of your world, I assure you that it's been successful in the past, dozens of times in my own personal experience, really, I regret the necessity for it, but we have no choice."

Tail twitching, The Grand Duke Ghra!nna poised on his muscular haunches for a very long minute. His orange glare burned into Fradero's eyes. Then he spat. "If the machine fails, Terran, you will die. Armor or no armor. You will die." He spun, and loped away.

Day 16

When Fradero ran into the game room, a bat-winged Osenbe business executive hovered screeching as it tried to disembowel a huge drunk. Three other large humans shouted boozy encouragement at both fighters.

Quarelay Station brought out the worst in most Guests. The relative crowding made some cranky. Others seemed to treat their extraction from normal environments and routines as a conferral of immunity, of invulnerability. And still others just got bored.

Whatever the specific cause, Quarelay Station saw more fistfights in six experienced months than a dockside bar saw in a universal decade. And Fradero had to hold the injuries to a minimum. It made his stomach hurt.

Wilhelm Teuler stood by a chess machine, arms folded across his barrel chest, disgust on his slowly reddening face. He gave Fradero a sidelong glance. "So. You will stop this nonsense, yes?"

"Yeah." He reached for the armor's controls. "What started it, sir?"

The trader took a pill from his pocket and swallowed it. "Lack of self-discipline, naturally. One moment they are discussing Time Acceleration like happy children; the next—" He shrugged. "Please watch yourself. The human was the football hero."

"I was trying not to remember that." He pressed a button on the controls. From the elbow down, his armor turned blue, confirming that it was set to "Soothe." Two taps would set it at "Stun;" a third, to "Sleep."

"Hey, guys!" Smile in his voice, wariness in his step, he approached the two, and reached out to pat the Osenbe's back. Its talons skittered off his armor. "What's the problem, huh?" He darted between them, reaching, touching, stroking, soothing. "Something wrong here?"

Ten seconds thoroughly to tranquilize all of them, including the three bystanders. He heaved a sigh of relief as the last murderous glare softened into dumb good-fellowship. He turned off the pacifier and slipped his hand through the armor to wipe his forehead. Then he turned to Charlie "Cruiser" Wojtkiewicz. "So what happened, sir?"

The bald man stood nearly two meters and had to weigh 150 kilos, minimum. Goofed-out from the glove, he gave a sheepish smirk and shuffled his feet. "I'm sorry, Dero. I was saying exposure to alien cultures made up for the time you spend in quarantine, but Mr. Kreeh Krah Karuh here called me an ignorant yahoo, and I got hot under the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

collar because my Ph.D.'s as good as his. I hit the table a little too hard, and—" Grunting softly, he bent over, then straightened up holding three large pieces of shattered plastiglass. "And that set everything off. I really didn't mean to, and of course I'll pay for it, but I . . . just lost control."

Fradero nodded. "Don't worry about it. We have lots of tables."

The four ex-athletes mumbled phrases of gratitude. The alien alit, folded its wings, and stood impassive, breathing heavily.

"There's fresh coffee on over at the dispenser. Help yourselves."

Kreeh Krah Karuh sniffed, launched itself into the air, and glided out of the room. The humans wheeled about and lumbered to the coffee.

Teuler inclined his head approvingly as Fradero passed him. "I congratulate you. You took and kept control of the situation like a true professional."

"That's one reason they pay me what they do, Mr. Teuler."

Day 28

The scream ripped down the corridor to the dining room. Fradero jabbed his armor on. Bursting out of his office, he spun right and ran. Heads popped out of cabin doorways; shoulders blocked his path. "Watch out! Coming through!"

Sprinting, he fumbled for the controls and tapped the "on" button three times. His forearm glowed cherry red.

Hand above his head, he snaked through the crowd and rounded the corner. At the far end of the hall, Cruiser Wojtkiewicz knelt over the prostrate body of Abraham Nikolaites. The gravchair jostled the ceiling.

Abe! Fury took charge. Armor-clad Fradero raced to attack.

Wojtkiewicz looked up, worry on his round face. "Call an ambulance."

Skidding, Fradero pulled his punch just in time. "You're bleeding!"

The bald billionaire looked down at his right arm. Four parallel cuts welled rich red blood. "What, this? Nah, nothing. This kid, though, geez, Dero, I don't like the way he looks."

Fradero deactivated the pacifier and called the MobileMed. He knelt on the thick carpet. Abraham had gone grey. His breath came with loud, uneven rasps; his eyelids quivered. "What happened to him?"

"I was on my way to the bar, an' the chair comes rolling towards me backwards. Coming towards *it* is that big cat, eyes glittery and fangs hanging out. An' then the cat coils up and leaps! That's when this little guy here screams and overturns his chair."

Fradero laid his fingertips on his brother's carotid artery. Abraham's pulse fluttered fast and erratic. Where the hell was the MobileMed? "So you pulled the, uh, the cat off?"

"Nah, I didn't need to do *that*."

He frowned. "The Ambassador *missed?*"

"Nah, I just got there first."

Fradero rocked back on his heels. "How the hell did you do that?"

"Dero, I was MVP—Most Valuable Player—four years in a row." Sadness softened his hoarse voice, as though his Host had disappointed him. "In eight years of pro ball, I never had to block anybody as slow as the Ambassador."

"*What?*"

"That cat's too slow for somebody

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

raised on neuro-transmitter accelerators. Short on goferit, too. Once I put him on his ass, it was all over. He lit out in the opposite direction and didn't look back."

What kind of diplomatic incident is about to explode in my face? Then he decided that he did not care. The Duke had almost killed a sick child. He deserved more than bruised hindquarters.

Abraham groaned, and tried to lift his head.

Fradero touched his brother's chest. "Don't move. The medic's on its way. Let it examine you before you get up."

The young-old eyes, washed with yellow and spiderwebbed with red, rolled fearfully. "The tiger! Don't let him—"

"Don't worry. Mr. Wojtkiewicz here chased it away."

"The Cruither?" His gums showed pink and toothless. "Wow!" His breathing calmed; color seeped back into his cheeks. "But why'd he get tho mad?"

"Did you say something wrong?"

"I . . . uh-uh." He moved his head carefully from side to side. "Only hello, and that I never met an intelligent tiger before, and I wondered if I could look at hith clawth. Then he wath chathing me, and growling, and thaying 'Thtand your ground."

"That rings a bell," said Fradero pensively, "but—"

The MobileMed rolled up and interrupted. It took charge of the scene with mechanical dispassion. After a brief examination it slid a stretcher underneath the boy, and trundled him off to the Infirmary.

Cold anger in his heart, Fradero watched him leave. Then he took a deep breath and headed for The Grand Duke Ghra!nna's quarters.

"You're insane!" Tail swishing, the Ngar!ang Ambassador paced his cabin. "I'll have you executed for that."

Fradero watched unhappily as the Duke came about and headed back toward him. His flame-red hand, held diplomatically behind his back, twitched with eagerness. It would drop a Ngar!ang as easily as a human. "Your Excellency, were you a less distinguished Guest, I would not have spoken to you prior to issuing the Sedation Order. The rules are quite clear. Any Guest who poses an inexplicable threat to any other Guest is to be sedated for the duration of the Quarantine Period."

"Ask the boy!"

"I have, Your Excellency. He does not know why you attacked him."

"Pfah!" Haunches flowing, he leaped onto the head-high platform that served as his bed. "I understand you, biped. Ngar!ang ways will not move you, so I will use Terran terms. If you sedate me, I will prevail upon your government to strip you of all your worldly possessions, and deny you the pension that would otherwise be your due."

Fradero winced. The Grand Duke meant every word. Though it was unlikely that he could bend the BCQ to his will, even the mere possibility gave Fradero pause. Abe needed that million dollars. He dared not risk losing it. "Your Excellency impales me upon the horns of a dilemma. If I sedate you, you will use diplomatic channels to obtain my punishment. If I do not sedate you, my bureau will punish me. Therefore,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

as I will be punished no matter what I do, my future is no longer a factor in my decision. My obligation to your fellow Guests demands that I protect them from the inexplicable threat you present. Thus, unless you explain—"

"Oh, very well!"

Fradero let out his breath.

"Your machines leave a tension a true female would resolve. I prowled the corridors to walk it off. The boy met me and asked for mercy. Scenting the reality of his motivation, and, frankly—" He spat at the wall. "—so overwrought that it did not occur to me to wonder how a grass-chewing biped knew to shape the mercy request, I prepared to grant it. *Noblesse oblige*."

Abruptly Fradero remembered the ethnology texts. The Ngar!ang Lords held death as their private preserve; any who killed another Ngar!ang without their permission itself died slowly, and in great agony. But with this power went a responsibility: the terminally ill and the fatally wounded had the right to ask any Lord for release from pain. And the Lord had to grant any valid request.

"So you thought Abraham was dying, and—"

"The child *is* dying. I *thought* he was asking for mercy. When he began to flee, I should have realized my mistake." His shoulders rippled. "But rut sang high and the blood pulsed sweet in my ears. I stalked his scent till the naked one, er, startled me into awareness."

Behind the armor's mask, Fradero smiled at The Grand Duke's description of Cruiser Wojtkiewicz's intervention. "Your Excellency—"

"What now?"

"Your explanation satisfies me completely, so there is no longer any question of sedation. But—" Yes, he stood close enough to the open door to leap to safety if the Ambassador reacted badly. "Meaning no insult, Your Excellency, but if the uh, machine fails to provide ample satisfaction, it is probably in need of recalibration, and—"

Ivory claws slid out. The Grand Duke Ghra!nna sprang.

He dove beneath those outstretched paws, tucked, rolled, and bounced to his feet in the corridor. Behind him, the door banged shut.

His heart pounded. Gasping, he turned. These goddamn toys. Armor or no armor, they would be the death of him yet.

Day 81

Fradero awoke to a chime and a ruby wink. Groaning, he checked that the hatch was locked and tapped the computer into screen-only mode. He touched the keys slowly, reluctantly. "Confirm."

BYSKAN VIRUS DETECTED

He closed his eyes. His heart beat unnaturally fast. "Quantity detected?"

1

Another one-time event. Though the plague, thank God, was not loose in Sirius Wing, he did have cause for worry. The question was, what to worry about? A possible smuggler or defective monitors?

"Point of entry into airstream?"

GAME ROOM

Not surprising. On impulse, he typed "Confirm status of virus."

UNDERGOING ANALYSIS

He whistled softly. "Identify!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

CHD

Cerebral Hormone Disrupter—the Crazymaker. Perhaps the worst of the three Byskan plagues.

Abraham had survived a variant of Calcium Dissolution Syndrome—the Killer. Their mother had not. She had lasted only a week.

Neuro-Synaptic Interrupter—the Crippler—attacked the spinal cord, usually causing extensive paralysis before the immune system eradicated it.

The Crazymaker's victims did not die. *Their* victims often did . . .

"Trace," he typed.

ACKNOWLEDGED

Somewhere on board hid a cache of alien virus. A cache of live virus. A cache with a very slow leak.

"Priority One," he typed. "Run ongoing comparisons of Guests' behavior with psychological profile of smuggler and/or Byskan agent and/or CHD victim. Alert when probability for any of those exceeds .5."

ACKNOWLEDGED

Could he do anything else? No, not yet. BCQ had scrutinized the baggage—and the bodies—of the guests so thoroughly before boarding that any search he conducted would prove fruitless. The virus probably lurked in a bio-cache disguised as a polyp or a pimple or a wart or a . . . the list stretched on forever.

Fradero knew only that at some point in the future, either the bio-cache would be removed and opened, or it would dissolve. And then would come the plague.

No sense watching for symptoms. The monitors and the diagnostic machines would detect them long before the naked eye.

What else could he look for? Guilt?

He might as well. Unless and until things heated up, he had no other role to play.

He just hoped he would not have to extend the tour. Extensions ruined morale; the violence rate always skyrocketed. And the heatsinks began to overload, too. . . .

Someone knocked at the door. Startled, he blanked the screen and flicked his armor on. Then he hit the remote unlock. "Come in!"

The door swung inward. Thomas Jefferson Nikolaites' care-lined face peeped around it. "Do you have a moment?"

He sat up straight, momentarily unnerved. "Uh—I, uh—" *Don't give anything away*, he warned himself. *Be careful*. "Please forgive my manners, I was, uh, lost in thought, there. Please, come in. Make yourself comfortable."

"Thank you." He slipped into the easy chair. He looked everywhere but at Fradero's silver face. "How does the time differential process work?"

Fradero almost cringed. He had played similar scenes with other Guests many times, and never liked them. This one, though, this one would hurt. "To put it most simply, time in Quarantine moves 260,000 times faster than normal. That means that even though you'll spend one hundred eighty days in here, only about a minute will have elapsed in the outside, real world."

Nikolaites studied the backs of his hands. "Doesn't that violate natural law?"

"I don't think so—since it works. In school I asked the physics faculty for

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

an explanation, but I'm afraid I didn't understand phrases like 'reverse tau effect,' and 'unexpected by-product of general relativity.'' He forced a laugh, hoping his father would join in.

Nikolaites did not even smile. He shifted uncomfortably and licked his lips. When he spoke, his voice was hoarse. ''Does the . . . aging process continue normally?''

Behind the mask of his armor, Fradero closed his eyes in sorrow and in sympathy. ''Oh, yes. From personal experience, I can assure you, it does continue just as it would normally.''

''I find you hard to comprehend.'' Nikolaites adopted a detached, musing tone. ''I was rich myself, before my son—'' His right hand made small circles in the air.

''Yes, sir, I know.''

''And I earned my money through hard work. Day by day I built my business, but not for the wealth. Oh, it was nice to be rich, don't get me wrong, but that wasn't what drove me. I was creating something, founding something that would outlive me, something that would give shelter and sustenance to my children and their children after them.''

''Yes, sir,'' said Fradero. ''I understand.''

''But I don't understand you.'' He spread his hands in confusion. ''You live your life in a single day and then—what? You have a million dollars cash and a pension. For what? You've created nothing. You have no family. How can *money* mean that much to you?''

He felt as if Nikolaites had slapped him. Straightening, he swallowed hard. With every fiber of his being he strove to bury his anger. ''You assume too much, sir. I do have a family. No, not a wife and children, but a parent, a sibling—''

''And a sick aunt who needs an operation.''

The scorn in his father's voice cut Fradero to the quick. He flushed. His fingers dug into his thighs. ''Something like that, yes.''

''Your aunt must be an evil woman if she would take your money. And you must be a fool to throw your life away for such a person.''

''Family means nothing to you?''

''Family means *everything* to me!'' He struck the arm of the chair. ''But in a true family, no one says 'Die so I can live.' In a true family one gives what one has, no more than that.''

''And if all one has is time?''

''Then one gives one's time—day by day. One does not pack one's life into a single day, put a ribbon around it, and offer it as a present. To give that is the mark of a madman; to accept, the sign of a monster.''

Fradero held his breath for a long count to twenty, then let it out in a tortured sigh. ''I think you'd better go.''

''Not yet.'' Nikolaites leaned forward, his eyes burning emeralds. ''You have to let my boy out.''

''I can't.''

''He'll *die* here!''

''Not if we give him longsleep —suspended animation—until the Cond—''

''No.''

''Why not?''

''I told you, he's not eligible.''

''What do you mean he's 'not eligible'? What—''

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I don't wish to discuss it. Let him go."

Fradero winced. "I'm sorry. I wish I could help, but—"

"But one million dollars is more important to you." He squared his shoulders, flared his nostrils. "All these years in this waystation have warped you. A human being would let Abe go home now, to die in the sun with his family holding his hands. But not you. No, you want him to die out here in the dark."

"No!" he screamed. "No!" He clenched his jaws and again held his breath till he could reply calmly. "No. I don't want him to die. Here or anywhere. But there's a—call it a time lock on the exit portal. I *can't* open it earlier. No matter what."

"You would let people die in here?"

"I *have* let people die in here. . . ."

"God!" Nikolaites shrank from him.

"Sir, don't you understand? I'm here to make sure nobody else's son winds up like Abraham."

Nikolaites made a rude noise. "The one million dollars doesn't count, eh?"

"Dammit, I told you it counts. Would you do this for free? Would you leave home for work in the morning, and come home that same night as old as your grandfather, if somebody wasn't paying you damn good money for it?"

"Not good money." Nikolaites rose. "Blood money."

Day 92

With a beep, the computer in Fradero's office flashed its latest analysis of the passengers' bloodstreams. He skimmed it and clucked in disappointment. Not even a hint of the virus.

Elbows on the desktop, he nibbled the knuckle of his left index finger. Three months already, and nothing solid. Could the monitors have given false readings twice?

They were not supposed to do it even once.

All right, assume the virus is on board. Two whiffs in three months suggests a very small quantity sealed almost perfectly.

When you walk the Web, the machines destroy your constituent molecules at your point of departure so other machines can reconstruct you at your destination. Your clothes and your luggage get the same treatment—but not at the same time.

You go straight to the receiver. Your clothes and luggage pass a computerized review that blanks any incoming signals resembling proscribed items: plant pests, nuclear devices, either of the two illegal drugs, or any molecule not registered in the systems' data banks. Random noise generated during this step degrades transmission integrity, but only another computer would notice.

The virus would never pass the review.

Only living beings bypass the review.

Thus it had to be inside someone's body.

A slow virus? One that burrows into the central nervous system and lies dormant until triggered by the appropriate stimulus?

No . . . Even dormant viruses are subject to excretion, as the cells they inhabit die, and they would have been detected. No, it had to be a relatively few—but virulent—viruses encased in a bio-cache.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

It takes major money to create a bio-cache and to seal it so well.

Byskan money.

He glared at the dark screen. Nothing foreign in anybody's system. Only Abraham Nikolaites showed any significant change in physiology. And what else could you expect from a dying boy?

Dammit, who's carrying it? And in what? His spinal column—the hollow of a rib—an epiglottal bump?

And for what? He could not understand it. Someone in Sirius Wing was running a suicide mission. The Byskans would never immunize the agent—why hand your enemy a shield just before you swing your sword? So the carrier would catch it *first*. What could drive anyone to accept that kind of bargain?

The Byskans lied. That's how it had to be. They told him the bio-cache held a microdot and someone would contact him to arrange its removal when he got back to Earth. And he, blinded by the money they must have offered, believed them.

Wait a minute. Could *it happen that way? Could they have that kind of network on Earth?*

He thought not, but turned to the computer anyway. "Are any Guests scheduled for any kind of surgery anywhere on Earth in the near future?"

"Yes," said its cool sexless voice.

He waited a beat, then shook his head. "Who?"

"Abraham L. Nikolaites."

He went cold as he saw the perfect scheme. It did not even require his brother's cooperation. In a New Mayo hospital, Abe had undergone biopsies, exploratory surgery, therapy. . . . At any point along the line someone could have slipped in something extra so that Abe, all unknowing, would carry it back for subsequent removal and dissemination.

And since Abe had had the Killer—was, in fact, dying of its effects—no one would raise an eyebrow if his tortured body scanned strangely, or if scrutiny uncovered a Byskan virus in his cells.

And since their father had spent all—no. Fradero would not think that. Besides, the Byskans did not need Thomas Nikolaites's cooperation any more than they needed his son's. In fact, going behind his back would enhance their chances of success. He who knows nothing can reveal nothing.

But New Mayo . . . "Please cite level of Byskan activity on New Mayo."

"New Mayo maintains absolute quarantine on all items of Byskan origin. BCQ rates quarantine as very tight, ranking third after Earth. No Byskans known to reside on New Mayo. No residents of New Mayo known to be in Byskan employ. Eleven million residents of New Mayo known to feel government of New Mayo is excessively paranoid; error factor of ± .8%. No history of plague outbreaks on New Mayo."

He fell back in his chair, aware only now that he had been sitting on its edge. So much for that hare-brained theory, thank God. Talk about paranoia. He had nearly indicted his brother and his father for genocide. . . .

But the problem itself remained. Who carried the virus? If Fradero failed to identify and isolate him before the end of the tour, then he would have to extend the tour. That would kill Abe for sure.

Yet Fradero could not discharge Guests

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

if he had reasonable grounds for believing plague to be among them.

Back to Square One.

Someone carried the virus in a bio-cache.

The bio-cache would open eventually. The Byskans had used time release caches for the last several universal years, but only two had ever escaped detection: the one that got Abe, and the one on Ganymede. In response, BCQ had lengthened the quarantine period so the caches would open before discharge. Common knowledge, except to distraught parents and Ngar!ang ambassadors. Common sense said the Byskans would try other approaches.

No evidence suggested that a Byskan network operated on Earth.

A hormone release? A cache that dissolved when certain chemicals rose to a specified level in the bloodstream? Or the reverse, a cached that depended on a high level of the substance to maintain itself, and disintegrated when the substance thinned out?

He spoke to the computer again. "Review blood chemistry analyses of all Guests from start of tour to present." Now, how would he phrase this? "Match on any substance whose concentration in light of all other factors seems artificial, whether high, low, or simply unnaturally consistent."

He snapped his fingers. "Wait. Amend that. Expand analysis to include all physiological indicators."

"Acknowledged," it said in a whisper.

He left the console to fix a cup of coffee. By the time he returned, the computer had printed a list of forty-one names. Frowning, he scanned it. And said, "Damn."

Flagged substances on the list included alcohol, caffeine, THC, nicotine—virtually all the recreational drugs known to the human race and some used only by aliens. "Okay. Eliminate any names if the indicated substance rises in concentration from zero to a peak and then falls back again. I'm looking for situations in which the concentration never goes above—or below—a certain unnatural level."

"Acknowledged."

Thirty seconds later it spat out:

Name	Anomaly	Maximum deviation from normal	Minimum deviation from normal
Wojtkiewicz, Charles	Blood Alcohol	+1496%	+1247%
Grand Duke Ghra!nna	Sex hormones	+ 423%	+ 241%
Fithapit the Hrma	Scale drop	+ 140%	+ 122%
Teuler, Wilhelm	Blood pressure	− 30%	− 15%
Nikolaities, Abraham L.	White blood cells	−1013%	− 977%

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He studied the list. Cross Fithapit the astrophysicist off—Hrma dropped scales heavily when forced to remain in close proximity to aliens for extended periods of time. Besides, scale loss of this sort was a mechanical process, not a chemical one.

As for Abe—no, he could not believe it. If the others turned up clean, he would investigate his brother. But not until then.

So his next step . . . He groaned aloud.

Great. Absolutely great. All I have to do is convince Cruiser to lay off the booze for a couple weeks, offer to adjust the Ambassador's sex toy again, and get Teuler to risk a coronary.

And he had to do it. No matter how it upset them.

Because if Fradero failed to spot the carrier, he and all his Guests would pass directly into Therapeutic Quarantine, there to remain until time or science unsealed the bio-cache and the sickness had run its course. No matter how long that took. No matter how many Guests died.

Day 107

From the foyer, drifting through the locked office door, came the muffled thud of human limbs splaying on parquet tiles. Wearily, Fradero swiveled his chair and gazed into the monitor.

Drunken Cruiser Wojtkiewicz, breathless and red of face, stood by the black doorway, shifting his weight from one foot to the other as he gathered his energy. His fists clenched and unclenched in time with the heaving of his lungs.

Fradero smiled in anticipation.

Wojtkiewicz backed off a few paces, inhaled hugely, and charged the arch. He gave a rebel yell as he leaped into the blackness—where he hung dead solid still for a long moment, then fell to the floor.

The experts had explained it to Fradero often; he had almost achieved comprehension. It had to do with air resistance, he believed.

The difference in time's rate slowed the relative motion of the outside air molecules by a factor of 260,000. He would have assumed that since Quarantine ran 260,000 times faster, anything going from inside out ought to knife right through—but the physicists said the components of the outside world must *ipso facto* have vastly more mass than those of Quarantine. At the doorway, the ex-athlete did not hurl his body into air: He threw a soap bubble at a brick wall.

Panting heavily, the big man picked himself off the floor. He scowled at the portal to realtime, smoothed his T-shirt, and hunched his shoulders for another run.

"Fool!" Wilhelm Teuler had entered through the far door in time to catch Wojtkiewicz's leap. Now he stood, arms crossed, an odd smile—half-jeering, half-embarrassed—on his lips.

Wojtkiewicz whirled, quick and graceful. "Enough outta you, buddy."

Before Teuler could reply, the Grand Duke Ghra!nna stalked in. He sat on his haunches, threw back his head, and gave a great coughing laugh. "The short one feigns enjoyment of your antics, biped, because not half an hour ago he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

attempted the same impossibility. He got no further than you."

Teuler's ears reddened. "Shut up!"

Six centimeters of Ngar!ang claws slid out. He eyed Wojtkiewicz, but braced his feline body against a charge from Teuler. "You at least do not weep when you fail, naked one."

"I am warning you—"

The Grand Duke Ghra!nna raised one paw and examined it ostentatiously. His claws gleamed in the corridor's light.

Teuler's cheeks went pale. He backed into the wall and let out a moan. His eyes widened till white showed all around his irises.

Fradero slapped the monitor's controls and rose from his chair. Time to end this farce before the Grand Duke gave Teuler a heart attack. Switching on his armor, he opened the door to the foyer. "Your Excel—"

Abruptly Teuler flushed. Terror flickered behind his eyes. His right hand dug into his jacket pocket; his left hand hovered, as if protectively, at the level of his heart. His hand flashed from pocket to mouth. He grimaced as he swallowed the tablet dry. He took a breath that seemed to go in forever, then let it out more slowly. Anger's blush faded from his cheeks. He relaxed.

"Mr. Teuler?" said Fradero uncertainly.

"I am fine." He waved a hand in Fradero's direction. "Mr. Wojtkiewicz, I apologize. What His Excellency says is correct. I did attempt to hurl myself through the doorway. I did—in anger and in frustration—cry. I should not have made fun of you for failing with better grace than I."

"'Oh, hey.'' Wojtkiewicz looked confused, but relieved. "That's okay, Willy. These things happen."

The commercial traveler turned to the alien. "Your Excellency, I believe I violated protocol a moment ago. I beg your pardon."

"Granted." Ears flat against his skull, he stared at Teuler. "You remembered your place in time. No harm was done."

"*Ja*," said Teuler bleakly. "No harm was done."

Day 140

"Mr. Nikolaites—"

"No!"

"Please, just hear me out, all right?" He reached inside the armor for the control panel.

"I do not listen to inhuman fools."

"Sir, your son—he only has—" His throat clogged; his eyes filled. He had to swallow hard before he could continue. "Sir, he only has a few weeks. If we give him longsleep—"

"I told you, no!"

"But—"

"Don't you understand? I'm bankrupt! I am a pauper!" Rage mottled his face. His fingers curled into claws. "I cannot afford—"

"But the Web Works won't charge—"

"Until we're out of Quarantine. And then what, eh? I'll tell you what then. They wake him from his long nightmare and turn him out to die."

"They won't do that, Mr. Ni—"

"They will because I cannot pay! I can't pay the damn maintenance fees. I can't pay Condwall-Abbey fees. I spent every penny I had on the trip to New Mayo and it didn't work. Don't you hear me? I can't buy Abe any more life!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I can," he heard himself say. "Dad, I'm going to give you the money. Tomorrow you'll have all you need." Then he stood stockstill, not believing what he had done, knowing only that he had made a serious mistake.

Nikolaites cocked his head. "Dad? You are going to— You are—"

"Frank, Dad."

"No." Eyes wide, Nikolaites stepped away. "No, Frank is at home, he's a *child*."

"I was, but Abe needed—"

"*Abe* is your 'sick aunt'?"

Unable to speak, he nodded.

Nikolaites looked at him for an eternity. Then, in an agonized whisper, he said, "What have you done?"

"I joined—"

His voice rose to a shout. "We didn't raise you for this! What would your mother think? Her son, a—a prison guard!"

Fradero extended his hand. "Dad, please—"

"You were supposed to go to college, get your degree, *be* somebody. We wanted to be proud of you! And of your children! How could you *do* this to me? Who will give me grandchildren now?"

"But Abe needed—"

"Abe is *my* responsibility! Not yours, mine! I am his father!"

"I'm his brother."

Nikolaites drew himself erect, inhaled through flaring nostrils, and spat. "No. You are not his brother. Because you are no longer my son. You have betrayed my every hope for you. You have gone behind my back—"

"It's my life, dammit!"

"You had no right to waste it like this!" His gesture encompassed all of Quarelay Station.

"Then how about you? Huh? You've destroyed your life to save Abe. Why is it right for you and not for me?"

"Because I love him."

"And I do too."

Hands clenching and unclenching, Nikolaites stared at his son. His mouth worked soundlessly; he breathed hard.

"Dad—"

"No!" He swung without warning. Fradero had no time to duck. The punch caught him high above the right ear. The armor protected him, but the force of the blow knocked him to the floor. "Don't—"

Before he could get up, Nikolaites, crazed with fury, tried to kick him in the ribs. "Dammit," said Fradero, "stop—"

Vinyl-shod toes connected with the armor's smoky field. Nikolaites yelped, and hopped backwards on one foot.

"Oh, Jesus." Fradero lunged and touched his father's knee.

Nikolaites crumpled.

Fradero called the MobileMed. "Sedate Mr. Nikolaites. Fix his foot—it might be broken. Then find his son and put him into longsleep."

As the machine slid its stretcher under the unconscious Nikolaites, Fradero stood watching, worrying.

And hating himself for having opened his mouth.

Day 150

The Grand Duke Ghra!nna pushed the door open with a flick of his shoulder and strolled into Fradero's office. "I grow bored."

"I wish I could say the same." He

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

also wished he could tell the Grand Duke why His Excellency was growing bored. Fradero had made a surreptitious visit to the alien's quarters and re-set the pleasure machine. Now, reported the computers, the level of sex hormones in the Grand Duke Ghra!nna's bloodstream had dipped below normal. Scratch one suspect.

Unfortunately, he had two other suspects, and needed information not available in his banks. He had requested the data from Quarelay Station's main computers, but they lay on the other side of the Time Acceleration field. Even running flat out, they could not transmit the answers in less than two weeks' experienced time.

"You find this monastic existence interesting?"

Fradero shrugged. "I have no aversion to machines."

"Pervert." His voice held heat, but not condemnation.

"Maybe." He suspected that after twenty-eight years, he would not know what to do with a real woman if he had one. "But to each his own, eh?"

The Grand Duke's ears perked. "I do not know that idiom."

"I'm surprised it's not in Your Excellency's interpreter. It's very common. It means, um, every living being is unique, and what satisfies one may not satisfy another, and, um, we just have to make allowances for each other's tastes."

"Hmm. So what is your own, biped?"

"Pardon?"

"What about this life so satisfies you that you're willing to do without females?"

"Well . . ." The scene with his father flared vivid in his mind; if he told the truth, he would say his life tasted like dried dung. But the Grand Duke was attempting to be sociable, and Fradero had enemies enough. "There's the money, though I suspect that strikes you as ridiculous."

"Why do you say that?"

Behind his armor, Fradero smiled. "I have met some Ngar!ang, Your Excellency, and I know your culture places little emphasis upon wealth."

"Correct." The Ambassador settled himself on the couch and yawned. His fangs flashed in the light. "So what else motivates you, Terran?"

"A sense of mission."

"Pfah!"

"Seriously. Bysk and Terra are at war. One Byskan plague has already broken out on Earth—and once is too often. My—my mother died in that one." Put so succinctly, it hid the depths of his anger and his determination. But no Guest wanted his Host to wax emotional. "I'm performing an important service to my people."

"Also ridiculous. Only children and fanatics justify their life's course with that argument, and you are neither."

"You ask for one overriding compulsion, Your Excellency, and I honestly cannot limit my answer like that. My rationale for choosing this life was more complex."

"Money. Service. What else?"

"Would you believe stability?"

The Grand Duke's ears twitched. He licked his right forepaw thoughtfully. "Do you mean the stability of one environment, constant demands, and unchanging rules and regulations?"

"In part." He pushed his chair back

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and lifted his feet to his desktop. That was one thing he could say for the Ngar!ang: They put comfort before formality, and expected others to do so, too. "But more than that. For me, Earth is a fossil in amber. I will experience forty-five or fifty years in here, and Terra will not change. When I emerge, I will understand the world of my retirement better than anyone alive except my colleagues."

"But then the carousel resumes its ceaseless spin."

"Of course. But I'll know why it's spinning because I will have had time to study trends and fads and social influences and technological developments and anything else that affects my world."

"And you will, of course, have all that money."

"Yes," he lied.

"And you will have held the enemy at bay for an entire day."

"Yes."

"The former Ambassador was correct." He slipped off the couch, stretched, and made for the door. "All you Terrans are born crazy."

"Only some of us, sir."

The door closed. He sighed. And got back to identifying the Terran who had gone crazy.

Day 160

Thomas Jefferson Nikolaites sat at the long table in the dining room. He spooned soup into his mouth; his arm rose and fell like a robot's. He stared blankly, unblinkingly, at the saltcellar. He did not react to the taste of the broth, or to Wilhelm Teuler's sitting down beside him, or to Cruiser Wojtkiewicz's splutter of exasperation.

Fradero called down the table, "Is there a problem, Mr. Wojtkiewicz?"

"Damn straight there's a problem!" He slammed down his mug. "I ordered beer—and got cold tea!"

"I am sorry about that, sir. The kitchen informed me there's a slight problem with the alcoholic beverage dispensers. It should be cleared up within a few hours."

"Hours!" Wojtkiewicz looked stunned. "Geez, Dero, how could you do that to me?"

He spread his hands wide. "It's Murphy's Law at work, sir. The bar never breaks down except when someone orders a drink. I promise you, though, I will personally deliver a pitcher to you the instant it's working again." *And if you're still free of Byskan viruses when your blood alcohol concentration has fallen to zero, I'll even let you drink it.*

"What a breaker." Wojtkiewicz seemed resigned to his fate, though. "What do you think, Mr. Nick? Do I have bad luck, or what?"

Nikolaites ignored him. Neither did he respond when the commercial trader on his other side muttered a few harsh syllables. He had too much grief in him to attend to anything else. Though Abraham endured in longsleep, Nikolaites mourned yet another lost son.

Teuler said, "Are you mad? You put salt in *my* soup, pigbrain!"

Now Nikolaites raised his head. Sorrow had hollowed his cheeks and rimmed his green eyes with red. He had not shaved for days; the stubble on his jaws stood dark and wiry against the pallor

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of his skin. He looked at Teuler. "What?"

At the head of the table, Fradero bit his lip while his experiment progressed. If he had deduced the situation properly, the monitors would start chiming soon. He caught himself wishing he had tried something else.

"You are trying to bring me a heart attack, *ja?*" Teuler's voice held a particularly ugly note.

Fradero touched the armor's controls. "Gentlemen, please, a little courtesy at our meal. Mr. Teuler—shouldn't you take your pill?"

At the sound of his son's voice, Nikolaites had stiffened. "Leave me alone." He dipped the spoon back into the bowl.

Teuler reached into his pocket. His eyes rounded to immense diameter; his face flushed brick red. With a guttural snarl, he seized Nikolaites's wrist. "Give them back!"

Wojtkiewicz shifted in his chair uneasily. "Come on, guys."

"Mind your own business, stupid ox." He did not release Nikolaites' arm. "Give me my pills!"

"Hey!" An injured expression settled onto Wojtkiewicz's broad face.

"*Ja*, hay, your natural food." He put his other hand on Nikolaites's shoulder and shook the man hard. "Give me my pills!"

Only a thoroughly panicked individual would insult Cruiser Wojtkiewicz. Fradero had his man. Time to intervene. He pushed back his chair.

Nikolaites narrowed his eyes. "Let go."

"No." His voice grew desperate. "I must have the pills. Give them to me now!"

As Fradero was getting to his feet, Wojtkiewicz reached in front of Nikolaites and grabbed a handful of Teuler's tunic. He yanked the man out of his seat. "Stop it, Willy."

"Cruiser, don't!" Activating the pacifier, Fradero tried to get across the room before real trouble started.

But he was too late. Teuler spun. Bending, he shoved his butt against Wotjkiewicz's thighs. With the same smooth motion he levered the massive arm and tried to hurl the astonished giant over his shoulder.

Wojtkiewicz did not budge.

Teuler's face purpled. He straightened. He clutched his chest, gasped for air, and collapsed.

Fradero summoned the MobileMed as he dropped to his knees beside Teuler. "Jesus God." He tapped Teuler on the nape of the neck just to make sure he stayed unconscious. "I'm getting too old for this shit."

Day 180

Teuler sat in a straight-backed chair, wrists and ankles securely manacled. His dark eyes were empty; his head bent. A small trail of spittle shone on his chin. He hummed a rambling, forlorn melody.

Separated from the commercial trader by an observation window, Wojtkiewicz said, "What have you got him on, Dero?"

"Nothing," said Fradero. "That's what the Crazymaker does to you."

The big man shook his head slowly. "Is it permanent?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"No. In three to six weeks he'll be back to normal."

"And us?"

He sighed, then shrugged. "I'm afraid you've all been exposed. You'll have to go through Therapeutic Quarantine now."

"Shit. I got a talk show to do."

"You know the Bureau won't let you carry the bug back to Earth. And it'll only take a minute. Universal-time, I mean."

"You mean six more months in a cage. Drooling." He made a disgusted sound deep in his throat. "Why didn't your machines catch it earlier?"

"The bio-cache hadn't opened yet. The way it works is, it stays sealed until the proper stimulus is applied."

"So what's—"

"I *think* that the key for this cache is high blood pressure."

"You're kidding."

He shook his head. "Nope. I'd been watching him. Every time he started to get excited he popped a pill. He'd breathe deep, relax, cool off—he never let his blood pressure get into the normal range."

"Well, if he's got a bad heart—"

"He doesn't. Or hypertension, either. I checked. So I figured, let's kick his blood pressure up and see what happens."

"Seems a pretty clumsy way of finding out."

"Finesse isn't my strong point." He shrugged. "You were the other suspect. That's why the bar broke."

"You thought—"

"The records said you drank only in moderation. Here, you always had a beer in your hand. I had to find out if *you* were carrying a cache that was somehow sustained by high blood alcohol concentrations."

"Aw, geez, Dero. I'm *deeply* wounded, you know."

"Better you than Earth."

"Yeah, I suppose. . . . But how was it supposed to work?"

"Teuler was going to testify before a permanent subcommittee about illicit trade with Bysk. Guilty or not, he would have been anxious. And immediately after that he was going to visit his son, who completes Space Force training in a few days universal time."

"You're losing me."

"My guess is, his reaction to the subcommittee would pop the cache. He would infect his son. Who would then infect everybody in camp. Since the symptoms take a while to show, the trainees would be scattered throughout the system before anybody noticed."

"And then all of a sudden—"

"Exactly. They'd all go nuts, and destroy whatever was closest to hand. Like trillions of dollars worth of defensive armament. Meanwhile infecting all their comrades. Afterwards everybody would spend a month or two like this." He gestured to the commercial traveler. "Not a very effective defense for our system, eh?"

"He knew he'd be doing this—" He pointed to Teuler. "—to his own son?"

"I don't know. We'll have to see what he says once he recovers. The last carrier thought the hypodermic spray was to plant a microdot under his skin. The Byskans might have fed Teuler the same line."

"Well, whatever. I'm glad you caught it."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"It's what they pay me for."

Wojtkiewicz stared at the manacled man. "Dero, I know they pay you guys a lot, but coping with maniacs *and* burning off your whole life in one day . . . Truth, now. What made you sign up for this?"

The doorway to Therapeutic Quarantine opened with a blaze of light. The MobileMed guided a longsleep capsule through the arch. Behind it walked Thomas Jefferson Nikolaites, his head high. As he caught sight of Fradero, pain contorted his face. His shoulders stiffened. He glanced at the longsleep capsule, then back to his other son. He looked away, took a step, and stopped. He wiped his eyes, and turned. "Frank?" He raised his right hand. "When you get off work . . . will you be having dinner with us?"

"That's why." Fradero's own eyes were moist, now. "That's why." ■

ON GAMING

Continued from page 85

past, such as Vidmax's *Mystery Disc* and there will be new laserdisc games being marketed by such firms as Simon & Schuster, Karl-Lorimar, and Mattel. Pioneer Electronics and its Laserdisc Corporation of America have continued to produce the increasingly popular disc, and in an example of the information-storage capabilities of the disc, recently released the *Grolier KnowledgeDisc*. *KnowledgeDisc* is capable of storing the entire nine million word *Grolier Electronic Encyclopedia* on one disc, each entry easily accessible through the laserdisc player's remote control.

But it's a truly interactive disc that games designers want. The industry was poised for adopting a standard for the CDI when RCA, in a surprise move, introduced DVI and shook everyone up. The DVI uses a compression technique to store more information on the disc.

I recently spoke to Noah Falstein, a game developer and designer at Lucasfilms about the CDI/DVI controversy.

"DVI's compression technique means that a lot more information can be fit on the disc. Though we at Lucasfilms aren't convinced it's the way to go, there's definitely a future there."

And it's not just the amount of information that DVI can hold that makes it important. "By virtue of being compressed, you can do full screen, live action video with the DVI. CDI, on the other hand, is limited to only one ninth of the screen. It simply can't put the information out fast enough," said Falstein.

Falstein then mentioned *Dream Park*, a novel by Steven Barnes and Larry Niven, that featured an all-too realistic role-playing game. "We're still looking for other ways to bring together technology, games, and movies. *Dream Park* is real important to us, a kind of illustration of where games might be going . . . with that kind of realism."

Fans of Michael Crichton's film, *Westworld*, with its berserk robots turning on vacationing role-players, may be alarmed.

As for me, I can hardly wait. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the reference library

By Tom Easton

Firecode, Chelsea Quinn Yarbro, Popular Library (Warner), $3.95, 453 pp.
The Folk of the Air, Peter S. Beagle, Ballantine/Del Rey, $16.95, 330 pp.
Voice of the Whirlwind, Walter Jon Williams, TOR, $16.95, 288 pp.
The Judas Rose, Suzette Haden Elgin, DAW, $3.50., 363 pp.
The Glove of Maiden's Hair, Michael Jan Friedman, Questar (Popular Library), $3.50, 234 pp.
Project Millennium, Curtis H. Hoffman, Ace, $2.95, 199 pp.
Timefall, James Kahn, St. Martin's, $16.95, 295 pp.
Nebula Awards 21, George Zebrowski, ed., Harcourt Brace Jovanovich, $8.95, 334 + xiii pp.

How much of SF is hogwash? Ask a non-fan, and the answer is, "*Every* bit of it!" As a true SF fanatic, and the answer is, "*Not* a bit of it!"

But we know better, don't we? The truth, as usual, lies somewhere in the grey, grey middle. Sturgeon's Law has it that ninety percent of SF—or anything—is crud. In my bleaker moments, I suspect Sturgeon was an optimist. When I'm high, I'm almost willing to say SF's HQ (Hogwash Quotient) is somewhere around 50 percent.

Be that as it may, let me narrow down my focus a bit here. I could define hogwash in terms of adjectivitis, lousy characterization, confusing—or no—plotting, or . . . But SF is a literature of ideas, and I want to concentrate on those ideas this time around, at least for the duration of my first couple of reviews. Non-hogwash, on this count, is SF that uses careful extrapolation of known science, or puts known science in a new setting, or otherwise respects what we know to be true. Hogwash SF makes up its science to fit the story, or swipes its science from the headlines of the *National Enquirer*; it so violates what is known that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it makes the label of fantasy much more apt than that of SF.

Obviously, a purist is going to include faster-than-light-travel, psi, and aliens-amongst-us in this particular basket. I won't argue, though I will continue to call such things SF out of my sense of courtesy and historical roots if for no other reason. But when it comes to . . .

Consider Chelsea Quinn Yarbro's **Firecode**. We have here a pretty good yarn with a simple gimmick: As folks operate their computers and calculators and telephones, they punch in a specific series of numbers and activate what the ancient magi called a fire elemental, a salamander, a whatsit that burns to ashes: machinery, operator, and house, phone booth, ship, hospital, army base, or other worksite, as well as all other human beings in the immediate neighborhood.

Lovely. You can just imagine the utter panic that strikes the nation. Fortunately, the story's star, Carter Milne, is a statistician who can correlate the use of computers and the like with the disasters. Unfortunately, she and the other doughty investigators have their lives complicated by personal losses and political infighting starring an FBI that wants to figure out the gimmick and make of it a weapon. Fortunately, Carter buys a new house after her dice-addict husband burns himself and their house up while playing with her home computer, and she finds in it the requisite ancient mystic books that set her on the right numeromantic path.

So where's the hogwash? It's a perfectly valid fantasy, ain't it?

It would be, if Yarbro had left the elemental an elemental. Alas, carried away by all the high-tech associations of computers and numbers, perhaps trying to make her paranoid fantasy more relevant to the mass market, she has to say the ancient mystics didn't really know what was going on. It's not a fire elemental or a salamander. It's a whatsit, a natural phenomenon, a resonance with reality evoked by a certain very specific number sequence, and it's S*C*I*E*N*C*E.

It's hogwash. It is the night terror of someone who belongs to a different millennium and doesn't really comprehend that new-fangled thing called arithmetic and how it helps one control the world. It may have a basis in the realm of metaphor. It has absolutely no basis in objective reality, for the magic number is only fifteen digits long. We undoubtedly hit it a thousand times a day in this age of intensive number-crunching. And nothing ever happens.

You say that doesn't bother you? Okay. The story itself is a slow thing, for Yarbro devotes what often seems inordinate attention to her protagonists' personal lives. Nor is it as suspenseful as it might have been, for she reveals her gimmick too early in the game. But Yarbro has a very nice hand with her characters, and it's not a bad story overall.

Peter Beagle gives us hogwash too, but he transcends it. The gimmick is the magic of witches, goddesses, and transtemporal possession, but it becomes prominent in **The Folk of the Air** only in its second half, long after Beagle has trapped you in a web of delightful characters and marvelous events and a sense of wonder that springs from the basic weirdness of ordinary human beings who wish to escape mundane lives.

The story begins when Joe Farrell, a wandering lutenist, returns to the San Francisco area. When his hitchhiker passenger springs a shiv, Farrell disorients him by pirouetting Madame Schumann-Heink (his ancient VW bus)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in and out of traffic. In the process, he spots a convertible full of sword-waving folks in medieval garb. And the reader —me, anyway—is busting a gut.

Things calm down after page 10. We follow Farrell as he seeks and finds the home of his childhood friend, Ben, and then meets Sia, the much older, heavy-bodied, craggy, wise Earth-mother with whom Ben lives. We learn that Sia's house is strange, its count of rooms and windows never twice the same. We follow Farrell as he runs into Julie, an old and frequent girlfriend, and then as he joins Julie and Ben with the medievaloids from the convertible in the League for Archaic Pleasures, a clear takeoff on the Society for Creative Anachronism.

Now comes plot. Farrell attends a League revel with Julie, and there he sees the teenaged Aiffe attempt to raise a demon and instead summon Nicholas Bonner from limbo. Together, Aiffe and Bonner take aim at Sia. Aiffe seeks power, Bonner something else, and Farrell is there, a continuing witness to the struggles that for a time give the League rather more reality than its members ever wished.

And here, perhaps, is the point. Beagle is examining the nature of escape. He shows us Farrell, constantly in flight from commitment and routine. He shows us Julie, once like Farrell but now settling down. He shows us a city bus driver who says that without the opportunties the League affords to play dress-up, without some relief from the thought that bus driving is all there is to life, she would not be able to stay sane. He shows us the range of possible involvements with preferred realities, from Ben's symbiosis with a ninth-century Viking to League members' obsessions with their fictive personae. He shows us Aiffe, determined to change her world by gaining power over it. He shows us Sia, who . . . I should not say too much. She both illustrates a very ordinary kind of escape and points up the inevitability of the failure, or at least the inadequacy, of all escapes.

I love Beagle for what he says and for the way he says it, but most of all for the mouthpieces through which he speaks. Unlike almost all modern novels, *The Folk of the Air* had me in love with its characters within the first few pages. Thereafter, Beagle could slip from time to time—he does, you know —and it didn't matter. I was on his side all the way.

You will be too. Don't miss this one, even if you have to spend the Pampers money on it. What the heck, use one of your old shirts to diaper the baby.

Two centuries after the time of *Hardwired*, Walter Jon Williams sets his latest novel, **Voice of the Whirlwind**. Earth is well on its way to becoming a backwater (parts already are). The future lies in space, with habitats orbiting near Earth, in the belt, and around Jupiter. Political units are "policorps," corporations grown to nationhood in their own right. There is interstellar travel, but it is strangely curtailed, for decades before, humans had found a vast spread of habitable worlds, empty but strewn with the artifacts of a vanished civilization, over which the policorps could wage war mightily. Then the aliens came home and sent the policorps packing. Humans are banned from the cone of space occupied by the aliens, but not from trade, and two policorps host the alien trade missions in Terran space.

Enter Our Hero: Steward survived the policorps wars over the alien turf and became a hometown mercenary, breaching policorps security systems

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and sowing sabotage or death for pay. His last mission killed him, but on his death, his insurance company paid off: It grew him back from a scrap of his tissue, and then it filled his brain with his own taped memories. The trouble was, he hadn't renewed his memory tapes in fifteen years.

The beta (clone) has a problem, and it gets worse when someone tortures and kills his therapist, and a verbal tape turns up from his alpha (original), and an old buddy from the war days brings him a mission. Events conspire to challenge his right to survive, and he accepts the challenge: He will, dammit, wind up his alpha's unfinished business. Then, maybe, folks will leave him alone to get on with his new life.

Williams has it all—a challenging problem, a hero who must grow or die, plenty of action, enough high-tech trimmings to give a star warrior wet dreams. And it works very nicely. The only drawback is that I sensed that at times Williams didn't really know where he was going. The story loses focus, and when it regains it, it is headed in a slightly different direction. Was Williams trying to make the tale more like life? Or did he plot it in segments, months apart, when his head was in different spaces? Or am I seeing things?

In 1984, Suzette Haden Elgin published the mordantly satirical *Native Tongue*. It posited a world of male chauvinist pigs ascendant, in which silly little women contented themselves with housework and shopping and flibbertygibbeting, except in the Lines. The Lines were a handful of families with a gift for linguistics, for alien languages, and everyone in them, man, woman, and child, was dedicated to serving as interpreters between the human species and the many species and the many aliens who hovered over Earth. Understandably, the women of the Lines didn't have much time for flibbering or gibbeting. But they too were oppressed by their lords and masters, and to escape, they developed, in secret, a special language, Laadan, that embodied and expressed the women's point of view, and they dreamed that if the language could ever penetrate the male's thick skull, the millennium would have arrived indeed.

Now we have **The Judas Rose**, or *Native Tongue II*. This one encourages us more than ever to say that Elgin is a top contender for the mantle of the late Dean Swift, for the satire is more mordant, more pungent than ever. She knows that all men are, in their bones, rednecks. She knows that religion, politics, scholarship, all are the power games of bull elk, their heads fattened with testosterone, and that women are mere innocent bystanders. Or not so innocent—Elgin's model of womankind is everybody's Ozark grandmother (she wrote the *Ozark* novels too, remember), who nods wisely over the antics of the male and meddles with malice aforethought, working around the male's irrational prejudices and prohibitions so neatly that he does her bidding, changes his very nature, and never knows it.

If only life were that simple! But men aren't that bad (I'm a man; I should know, shouldn't I?). And Ozark grannies are rare, even, I'm sure, in the Ozarks. Life is that realm between heaven and hell where the Swifts travel on their Gulliverian rounds, sticking their needles into every sacred cow in sight. And Elgin fulfills this role magnificently.

Sadly, *The Judas Rose* takes an inordinately long time to convince the reader that Elgin knows what a plot is. We get snapshots of numerous appar-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ently unconnected events, of fatheaded males, and of conniving females. There is a woman of the Lines giving up her baby to the nunnery that serves unwed mothers. There is a nurse, whose brother is a particularly noxious example of androcephalia, who is hired by the lines and exposed to Laadan. There are Thursday Night Devotionals, when just a bit of the liturgy is rendered into Laadan. There is . . .

I cannot give it all. Suffice it to say that the baby grows up, is put in charge of a Catholic project to "sanitize" Laadan by removing the female point of view, thereby making it suitable for use in Catholic as well as Protestant Thursday Night Devotionals. And she is zealous, so zealous that she strips Laadan of all its beauty, making of it a clumsy, crippled thing and causing the Thursday Night Devotionals to die out. But!

Along the way we are reminded that the women of the Lines prize their children for themselves and for what they can contribute to the Lines' linguistic mission. They would *not* surrender a child to any nunnery.

We learn the child's name: Miriam Rose. We remember the book's title. We learn that Sister Miriam is famous for her ear for music.

We realize that not only does Elgin know something about how to plot a story, but she also knows so much about conspiracy-type plots that we should be thankful. If she were not a linguist and a novelist, and at that an SF novelist to whom no one pays attention, . . . I hate to think of what such a mind in the service, say, of Libya or Iran or Ireland or you-name-it might do to our safe and cozy world.

But wait a minute! Elgin has a male plotter in her story, a religious fanatic as pleased as punch with his schemes. But the women of the Lines put him to shame. They are just as capable of self-congratulation—they are human, after all—but they are more patient, more subtle, more insidious, more effective by far. And perhaps Elgin is saying that we have just such plotters among us now, living in every land but—thank whatever Powers may be!—in the service of a broader cause, humanity.

May it be so.

I met Michael Jan Friedman at the 1987 Boskone, where he begged me, please! to read his novel, **The Glove of Maiden's Hair**. Okay, I read it. And it's not bad. It's not major lit, nor major fantasy, but it moves well, the plot hangs together, and the characters —especially the heroine —come to life surprisingly well considering how spare and unembroidered Friedman's style tends to be.

Friedman begins on the world of Elvenhome, where elven hero Harlicch confronts elven villain Bor. Bor's wizards are making their mystic passes to send Harlicch to Hell. Harlicch is helpless, paralyzed in every limb except the hand that wears the glove woven of a maiden's hair and is therefore immune to magic. At the last moment, he seizes the scroll that records the spell, knowing that his only hope of return is to translate the spell and use it himself.

Hell, as usual in such tales, is Earth. Harlicch fights off a horde of crazed Manhattan winos and begins to wander. He hears screams, and he rescues Our Heroine, English professor Barbara St. James, from the traditional fate-worse-than. Now he has an ally who can enlist a former lover, Ted Willig, to translate the scroll.

Ted is jealous, but he obliges, becomes convinced that the spell is real, no joke, and enlists on the side of the good elves. A wizard comes to Earth

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in pursuit of Harlicch, just to be sure he doesn't return until Bor has his victory. Ted and Barbara use the spell to hop to Elvenhome and send Harlicch a little help.

And all seems well, if a mite predictable. Bor winds up in the dungeon. Ted gains an elven mistress. Barbara and Harlicch are blissfully in love. But now strange forces sap Ted's strength. He must return to Earth if he is to survive at all, and the wheel of fate is such that he must be the help that had already rescued Harlicch. And Barbara feels such obligation that she must abandon Harlicch and follow Ted to help him in the last battle of the story.

Friedman's theme is love and loyalty and the conflict that can emerge from their interplay. And he handles it well, though I thought his final touch a mite too cute.

I also met Curtis H. Hoffman at Boskone, and he too said, "Please?" Therefore and forthwith, here's his book: **Project Millennium**. And it too is not bad, is not major lit or fantasy, and moves well. The premise is that far, far in the future, there will be the massive Entertainment Company (EC), which will for a price stage almost any sort of diversion a customer can ask. And then a customer asks for a war. "No problem," says executive Gedrik, a robot. And he ships two artificially intelligent megalomaniacs—one thinks it is Snorri Sturluson, Norse bard; the other says it is King Richard III—off to a distant star system, where they have a century to clone their flesh-and-blood forces and prepare for battle. Snorri chooses to produce an imitation of Asgard, Norse gods and all. Richard is more Machiavellian. And the day of Ragnaroque approaches.

Meanwhile, back at headquarters, Gedrik is in trouble with a new boss, a nasty, sniping, conniving fellow. Reporters are investigating rumors about all the nasty, unethical, immoral things Gedrik and the Entertainment Company are up to. The customers are complaining. And . . . Enough. You get the idea.

Unfortunately, the story itself doesn't quite live up to the promise inherent in the brief description. Yes, there is action. Yes, there is blood. Yes, good wins out in the end. But near the beginning of the story, Hoffman gave me the idea that he was going to be playing his tale for yucks; it may have had something to do with the People's Recently Activated Tank Formation and Loss Leaders, Special Platoon—Lead and Tan, that he mentioned in passing. Thereafter, the humor remained, but it was not consistently present, on the expected level, or successful. I had the sense that Hoffman may be able to plot entirely adequately, and even to construct subtle parallels of myth and reality, but he needs to work on his vaudeville delivery.

In the introduction to his new novel, **Timefall**, James Kahn says he is a licensed physician and surgeon specializing in emergency room work. The biographical note on the jacket flap confirms the claim, so I suppose it's true, even if it does fit into the story suspiciously well—it isn't often that the novelist makes himself a character in his tale.

Yes, I know. It was once traditional for a writer to set his or her more fantastic yarns in a frame, as in "I was walking on the beach one day, when a bottle washed up by my feet. In that bottle was a manuscript, this tale . . ." But the viewpoint character was usually explicitly *not* the author. Here Kahn

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

deviates from tradition, saying, "Looky cooky! That's me! Name: James Kahn. Profession: Emergency room physician. And one day, this derelict was carried into the ER, and he gave me a manuscript, this tale . . ."

The derelict, Joshua Green, had been a paleontology professor. He had had a wife, Di, whom he loved dearly. He had had a drug-running friend, Lon. And one day, that friend showed up with a strangely enameled, chased, and bejeweled human skull. It tested out to some 70 million years old. In it resided clues to a lost civilization. And Joshua, Di, and Lon were off, hot on the trail of mystery.

Clearly, this is the sort of tale we all thought had gone extinct decades ago. In this age of airplanes, instant transport, satellite photography, and other marvels, lost civilizations are no longer possible. But Kahn tries hard to convince us, and he succeeds at least partially. His lost city is swathed in mists and its existence is blurred by the roiling of time itself in its vicinity. Its function? Di dies, but from the time-warped tunnels beneath the city emerges Jasmine, immortal android. She welcomes Joshua and tells him it is his task to save the universe from the doom set up by his "precestor" in the last cycle of time, some 70 million years ago. (The dinosaurs, it seems, were really genetically engineered pets.)

Nonsense, you say? Archaic nonsense, even? Of course it is. But Kahn handles it with dash and despite the whoppers he asks us to swallow as he spins his tall tale in a classic mode, he succeeds reasonably well.

The show is never over until the fat lady sings. Today, we have two shows—this column and the 1985 Nebula Awards—and one fat lady. The lady is the celebratory anthology, **Nebula Awards 21**, prepared to honor each year's Nebula winners and kick a little loot into the coffers of the Science Fiction Writers of America, Inc. This one was prepared by George Zebrowski, and he did an excellent job, from his introductory sketch of the Nebula process through the final, more detailed appendix on the same subject. In between, we have a fine essay, "What Was 1985 That We Were Mindful of It?" in which Algis Budrys says something worth hearing about the changefulness and permanence of excellence. There is Gregory Benford's "Effing the Ineffable," in which Benford struggles with the function of the alien in SF, and then Bill Warren's summing up of a lousy year for Hollywood.

And in between *those* are the stories. We have the Nebula winning short story, "Out of All Them Bright Stars," by Nancy Kress; the winning novelette, "Portraits of his Children," by George R. R. Martin; the winning novella, "Sailing to Byzantium," by Robert Silverberg. The novel winner was Orson Scott Card, for *Ender's Game*; the novel is not here (surprise!), but Card has contributed a very nice novelette from the Nebula ballot, "The Fringe."

And then, just to flesh out the book, there are several contributions from Nebula finalists and others: Howard Waldrop's "Heirs of the Perisphere"; Joe Haldeman's "More than the Sum of His Parts"; Arthur C. Clarke's "The Steam-Powered Word Processor"; and James P. Blaylock's "Paper Dragons"; as well as poems by Bruce Boston and Siv Cedering. All, as Budrys says, are excellent, even if next year we may change our minds about which are *most* excellent. Right now, I think the best story in the book is Martin's "Por-

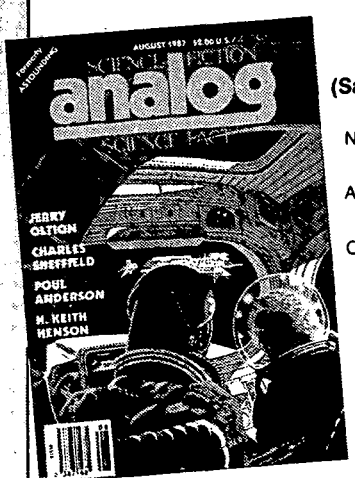
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

traits," a remarkably effective tale of artistic obsession and human blindness.

Can't I find *anything* to kvetch about? Not even a quibble? Not even a hair to split? Well, there's the dedication. It sets the book in memory of Frank Herbert, Thomas N. Scortia, and Manly Wade Wellman, and that is entirely appropriate. They deserve our fondest memories, for they were among SF's greats. They may even now be among the immortals of literature, though we can't be sure of that for another century or so. But, dammit, they died in 1986. And the book is all about the 1985 year. Shouldn't it be in memory of those who died then?

Tra-la. ■

A special offer for Science Fiction fans . . .



8 issues of Analog for only $11.97

(Save 25% off the regular newsstand price)

NAME _____

ADDRESS _____

CITY _____ STATE ____ ZIP _____

Mail to:
ANALOG
P.O. Box 1936
Marion, OH 43305

☐ Payment enclosed ☐ Bill me

For Immediate Subscription Service Call
TOLL FREE 1-800-247-2160 (in IOWA 1-800-362-2860).

Please allow 6 to 8 weeks for your first issue.

Outside US and Poss. $13.97 (cash with order US funds). DAK7A-6

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brass tacks

Dear Stanley:

About the letters on abortion by Messrs. Moler, Parson, *et al.*, nobody seems to heed the population problem, with which abortion is inextricably entangled. A couple of decades ago I calculated and discovered that, at the then rate of increase, since population grows by compound interest, in about 1,400 years there would be one human being for every two square feet (1.86 square meter) of land surface on the entire earth. Since the average human being occupies two square feet of ground while standing, this would be, literally, standing room only.

Of course something would have to give long before then, since crops cannot be grown on land on which someone is standing. The rate of growth has since declined, according to a recent estimate (*New York Times*, 6/13/82, p. 4) from 1.99 to 1.72% per year. This means that SRO would be postponed to, perhaps 2,000 years. (Someone else may run through the calculations if he likes; I am too busy with a novel.) But the principle remains.

Some say pooh! We can send the surplus off into space to live in artificial satellites. By all indications life in such an environment would be more taxing than life in, say, present-day Antarctica; and we don't see the annual population increase of Asia (13,000,000 at the time of my original study) rushing off to Antarctica.

At an international conference in Reagan's first term, the U.S. representative, in line with Reagan's prejudices, poohed the whole idea of overpopulation, saying the world could easily accommodate twice its present population. It probably will have to in a few decades; but anyone who thinks this will be jolly is kidding himself. He should visit a country suffering under heavy population pres-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sure, e.g. Egypt or India (as I have) and see for himself. Even Pope John Paul II seems a little ahead of Reagan in this matter.

If we could persuade everybody to give up sex, save under conditions of rigorous control and compulsory contraception, the problem could be solved. But this seems as likely as beating a rhinoceros to death with a flyswatter. In lands where growth has been sharply reduced (e.g. China and Japan) this has been achieved largely by liberal abortion policies.

So take your pick. Since we have more people on the way than this finite Earth has room for, either get rid of them while they are insensate blobs of protoplasm, or have them killed off later by starvation and by the wars and domestic violence that overcrowding aggravates. As in Godwin's famous *The Cold Equations*, the figures cannot be wished away.

L. SPRAGUE DE CAMP

I, too, was astounded at how few letters (not only of the ones we printed, but of the ones we received) even acknowledged the existence of a population problem. It cannot *be ignored indefinitely. It won't let itself be, and sooner or later a lot of people are going to have to learn that it's quite possible to like children (and even adults) individually, yet recognize that excessive numbers of them constitute a deadly danger to all.*

Dear Mr. Rick Cook:

Shortly after my fortieth birthday, I began cursing the year of my birth, as the shock of realizing that I wouldn't live forever was replaced by the cold, certain understanding that not only was I not going to get to "go," I would never even receive an electronic postcard from Titan announcing the birth of a grandchild. The most I could hope for was a chance to help keep the bureaucrats off the backs of those who were "clawing their way out of the gravity well." But even my dream of becoming a space lawyer gathered dust as I wallowed in bitterness.

It's been some time since I've closed a science fiction book without thinking, "It's not for me. I won't see it." I've been a fan for twenty-five years. I still read a couple of books a week, but the glimmer in my eyes is no longer hope but tears of fury—at the stupidity of Congress, at the thought of three Saturn Vs rotting in the sun, at my parents for not waiting twenty years.

I know, intellectually, that it wouldn't have mattered when I was born. People who take the sensation of weightlessness for granted will drift and dream and discover their mortality and rage at the distance to the stars. As the human gene pool spreads itself through interstellar space, men will shake their fists at the intergalactic void. I know all that. It doesn't help. Contemplating the midlife crisis of my descendants has been precious little solace for my own.

"Mortality" has given me back my dreams. Thank you.

MARY HELM

Enid, OK

P.S. After finishing this letter, I read your story again, slowly. I was reminded of the fellow who claimed to have written the "perfect Country and Western song": In four short lines, he covered pickup trucks, trains, getting drunk, prison, a rainstorm, dying and Mom. You have, in my opinion, written the perfect science fiction story.

Dear Dr. Schmidt:

Your criticism of my "ridiculous" reference to the L5 Society (January Brass Tacks) was well deserved. It was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

an inexcusable exercise in polemic excess. I offer my apology to the society and its members.

ROBERT B. MOLER

Catharpin, VA

Dear Dr. Schmidt,

I never thought I would be writing in response to the book review column, but that is what I usually read first each month, and I have found Tom Easton's synopses and evaluations of books accurate and informative in guiding my own purchases. However, the January 1987 column contains some assertions by Mr. Easton to which I would like to respond.

Mr. Easton asked us to "Admit that the two governments [American and Soviet] are equally evil or good (aren't they?)." I would like to answer his question with a few of my own. Has Mr. Easton ever read *The Gulag Archipelago*, or anything else written by Solzhenitsyn? Has he read the stories in *Time* and *Newsweek* about how they treat Andrei Sakharov? Is he aware of the way Soviet Jews who seek to emigrate are treated? Has he ever heard of Simas Kudirka, the Lithuanian sailor who tried to defect to an American Coast Guard vessel, and finally won his freedom after years in Soviet prisons? Is he aware that we recently passed the 30th anniversary of the Hungarian revolution, which was crushed by Soviet tanks?

Mr. Easton is repelled by "military solutions." He should wake up to the fact that the mindset that American liberals so despised in the military and intelligence services is the dominant force in the USSR. Every man, woman, and child has been forcibly drafted into the "People's Republic" and controlled in what they can say, what profession they can seek, what education they can obtain based on the criteria of loyalty to the communist party. I am sure Mr. Easton must be aware that owning a photocopier or a personal computer and printer can be a criminal act in the USSR. The fundamental "human right" in the Soviet Union and its Eastern European satellites is the "right of future generations to be secure in the blessings of socialism," which right, according to the Brezhnev Doctrine that was employed against Czechoslovakia in 1968, overrides any attempt by those who are living today to change their form of government. Contrast that policy with that of the United States toward its allies and its former enemies from World War II.

As a lawyer, I am constantly amazed by the willingness of people to believe only the best about criminals and confidence men, even after they have been ripped off. The way the Communist party governs the USSR is the biggest con game in history. How can we trust our future to the good faith of such men?

Tom Easton said we should call ourselves a "People's Republic." He misunderstands the use of the phrase in the name of communist China; a direct translation is not "the People's Republic of China," but rather "the Chinese People's Republic." It is simply an appeal to the ethnic, racial, and cultural identity of Chinese people, not an appeal to the human race in general. Again, in its targeting at populations of "overseas Chinese," and the inhabitants of Taiwan, it is part of the communist con game.

Finally, Mr. Easton looks forward to spending nuclear weapons budgets on an international space program. Apparently he is unaware that in order to maintain the security of Western Europe and Japan, not to mention Alaska, Hawaii, and the contiguous U.S., it will be far more costly to do so with conventional

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

weapons alone. Many critics of SDI argue against it because it "would make it easier to start a war." Just think how much easier it will be to start a war when only conventional weapons are around.

Mr. Easton has fallen into the same state of misunderstanding that I found in many of my Japanese friends and acquaintances, who believe that by disarming themselves and kicking out the United States they can become "the Switzerland of Asia." When Douglas MacArthur used that phrase, he forgot to tell them that Switzerland maintains its independence and security by universal military service and by honeycombing all the mountain approaches into their land with hidden defensive installations.

The yearning for escape from the threat of nuclear war should not blind us into a false euphoria over the character of the other players. Though I do not believe nuclear weapons have any inherent virtue, there is a recognition of geopolitical reality in the slogan that says, "When nuclear weapons are outlawed, only outlaws will have nuclear weapons."

RAYMOND TAKASHI SWENSON
Attorney at Law
Omaha, NE

Dear Sirs:

In the January 1987 issue, Tom Easton, in a book review, remarks: "Wasn't the purpose of the U.S. Constitution to make of us a "People's Republic"? . . .Embrace the Soviets as fellow people . . . Admit that the two governments are equally evil or good (aren't they?)." If Mr. Easton really believes this—and I find no evidence of tongue-in-cheek—he has forfeited any claim for respect of his perception and judgment.

To refute all the wrong assumptions in the above would take too long. Let me make a few points: Our constitution established a maximum freedom for the individual; those tyrannies calling themselves "People's Republics" are just the opposite. Our government is evil to the extent that it is moving away from individual freedom and morality; the ultimate result of that morality is communism, or rather the despotic government that tries to justify itself with the theory of communism. The Russian people no doubt are good people, but they do not run the country; they are enslaved by the communist apparatus.

The Russian communist government has slaughtered at least forty million of its people in order to establish and maintain its power; it maintains millions of political prisoners in slave labor camps; it has caused or sponsored the slaughter of untold millions more in such places as Afghanistan, Southeast Asia, Africa, Cuba, Nicaragua. It has repeatedly announced its intention of dominating the world, and has made significant progress toward that aim since World War II. To our shame, our government has aided it in that progress. But our government has done none of the evil things mentioned above.

I share Mr. Easton's concern for our children. Mr. Easton's solution is unilateral surrender; however many countries have found that it is possible to be both Red and Dead. War can be prevented by surrender or by making this country too powerful to be attacked. We should stop trade and aid to the Russian communists. We should stop talking to the communists, who are building their own SDI as fast as they can, and proceed to build our own SDI and other forces on an emergency basis before the Russians attain overwhelming strength. I am not willing to trust myself or my

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

children to the benevolence of such as Gorbachev and his successors.

JOHN R. LEDBETTER, JR.
Rogersville, AL

Mr. Easton replies. . . .

I am aware of the differences between the U.S. and the USSR, and I vastly prefer the former. My comments about the relative worths of their governments were meant to be provocative in the fine old *Analog* tradition, and they clearly succeeded. But think about it: The U.S. *is* a republic, and its government *is* "of the people, by the people, and for the people." And if that doesn't make it a "people's republic," we had better rewrite the dictionary. Better yet, we should recognize that other People's Republics give at least lip service to some of our own most cherished ideals, and then encourage them to go beyond lip service.

Mr. Swenson is quite right that relying on conventional weapons means that it becomes easy to start a war. He ignores the simple fact that conventional wars have, if not winners, at least survivors. Mr. Ledbetter ignores history: In the long run of centuries and millennia, even when we face a Hitler, who wins or who surrenders doesn't matter. The important thing is to ensure that there *is* a long run for the species.

TOM EASTON

Dear Dr. Schmidt:

Your January editorial seems to suggest that you consider the "American experiment" worth defending—a position with which G. Harry Stine's very insightful observations in "The Alternate View" are not compatible. But Tom Easton evidently disagrees. He proposes, without discerning irony, that we confess the "errors of our ways" to the Soviets and "admit that the two governments are equally evil or good (aren't they?)." He has a touching belief that these admissions will cause the Soviets to reciprocate when we "embrace (them) as fellow people" and "swear eternal friendship."

The question is whether *Analog* endorses Easton's vaporings or Stine's sensible commentary on averting nuclear war. This is a goal we all share (doubtless to Easton's disappointment, as it may restrict his scope for self-righteousness). But the goal of preserving a free society is also a worthwhile one—and the two do not have to be contradictory.

STEPHEN J. WHITE
Charlottesville, VA

Analog *does not endorse or condemn any view presented in its pages—those belong to their individual authors, and it's not uncommon for two authors to express radically different views within a single issue. This does not imply an editorial belief that all views are equally valid, but only that all are open to consideration.*

Incidentally, some readers objected to Mr. Easton's expressing political opinions in a review column. But if a reviewer has views which are likely to color his reactions to a particular book, wouldn't you rather know about them than not? ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a calendar of analog upcoming events

2-4 October
DRAGON CON '87 (SF, Fantasy, Gaming, Computer conference) at Lanier Plaza and Convention Center, Atlanta, Ga. Gaming Guest of Honor—Gary Gygax, Computer Guest of Honor—Richard Garriott, Fantasy Guests of Honor—Robert Asprin and Lynn Abbey, SF Guest of Honor—Brian Herbert, Special Guest—Michael Moorcock. Registration until 15 September—$25 fan, $30 game (includes four tournament entries). Registration limited to 3000 and may be filled by preregistration. Info: Dragon Con 87, Box 148, Clarkston GA 30021. (404) 296-7148.

2-4 October
CONTRADICTION SEVEN (Western NY state SF conference) at Ramada Inn, Niagara Falls, N.Y. Guest of Honor—Anne McCaffrey, Fan Guest of Honor—Mike Glicksohn. Registration—$16 until 12 September, $20 thereafter. Info: Contradiction, Box 2043, Newmarket Sta., Niagara Falls NY 14301. Include S.A.S.E.

2-4 October
TUSCON 14 (Arizona SF conference) at the Executive Inn, Tucson, Ariz. Guest of Honor—Tim Powers, TM—Ed Bryant, Fan Guest of Honor—Somtow Sucharitkul. Registration—$15 until 1 September, $20 at the door. Info: Box 26822, Tucson AZ 85726 (602) 881-3709.

9-11 October
ROVACON 12 (Tidewater Virginia area SF conference) at Salem Civic Center and Quality Inn, Salem, Va. Guest of Honor—Ben Bova, Special Guest Writer—Christopher Stasheff, Star Trek Guest—Majel Barrett Roddenberry, Guest Artist—Frank Kelly Freas, Media Guest—Bibi Besch. Info: Box 117, Salem VA 24153 (703) 389-9400.

9-11 October
ARMADILLOCON 9 (Austin SF conference) at Wyndham South, Austin, Tex. Guest of Honor—Bruce Sterling, Special Guest—Beth Meacham, Fan Guest of Honor—Mark Olson, TM—Pat Cadigan. Registration—$25 in advance, higher at the door. Info: FACT, Box 9612, Austin TX 78766. (512) 443-3491

16-18 October
SOONERCON 3 (Oklahoma SF conference) at Central Plaza Hotel, Oklahoma City, Okla. Art Guest of Honor—David Cherry, Writer/Filk Guest of Honor—Robin Bailey, Fan Guest of Honor—Laura LeHew, TM—Dell Harris, Comics Guests of Honor—Richard and Wendy Pini, Special NASA Guests also. Registration—$12 until 1 October, $15 at the door. Info: SoonerCon 3, Box 1701, Bethany OK 73008. Include S.A.S.E.

16-18 October
NECRONOMICON (Florida Gulf-coast SF conference) at Holiday Inn—Sabal Park, Tampa, Fla. Guests of Honor—Orson Scott Card, Frederik Pohl, Elizabeth Anne Hull. Registration—$10 until 15 September, then higher. Info: Stone Hill SF Association, Box 2076, Riverview FL 33569. (813) 677-6347/973-0038.

23-25 October
NOTJUSTANOTHERCON3 (central Massachusetts SF conference) at University of Massachusetts, Amherst, Mass. Guest of Honor—Joan D. Vinge, Ben Bova, Jane Yolen. Registration $13 in advance, $15 at the door. Info: NJAC3, RSO 104, Campus Centre, UMass, Amherst MA 01003 (413) 545-1924.

—Anthony Lewis

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SCIENCE FICTION BOOK CLUB

Take any 5 books for $1 with membership.

SEE OTHER SIDE FOR ADDITIONAL SELECTIONS.

1743 Pub. ed. $16.95
Club ed. $5.98

3285 Pub. ed. $18.95
Club ed. $5.98

3558 Pub. ed. $17.95
Club ed. $4.98

2733 Pub. ed. $18.95
Club ed. $6.98

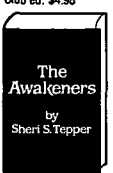
2659 Pub. ed. $18.95
Club ed. $6.50

3673 Pub. ed. $19.95
Club ed. $7.98

3475 Pub. ed. $15.95
Club ed. $4.98

★ **3238** Pub. ed. $19.95
Club ed. $9.98

3418 The Ladies of Mandrigyn; The Witches of Wenshar. Spec. ed. ▲ Club ed. $7.50



3640 The Awakeners: Northshore; The Awakeners: Southshore. Comb. pub. ed. $30.90 Club ed. $6.98

2766 The Wave and the Flame; Reign of Fire. Spec. ed. ▲ Club ed. $8.98

3509 Myth-ing Persons; Little Myth Marker; M.Y.T.H. Inc. Link. Spec. ed. ▲ Club ed. $6.98

5520 The Sleeping Dragon; The Sword and the Chain; The Silver Crown. Spec. ed. ▲ Club ed. $8.98

2543 Dragonflight; Dragonquest; *The White Dragon.* Comb. pub. ed. $26.85 Club ed. $7.98

▲ Exclusive hardcover edition.
★ Explicit scenes and/or language may be offensive to some.

How the Club Works: You'll receive your 5 books for only $1 (plus shipping and handling) after your application for membership is accepted. We reserve the right to reject any application. However, once accepted as a member, you may examine the books in your home and, if not completely satisfied, return them within 10 days at Club expense. Your membership will be cancelled and you'll owe nothing.

About every 4 weeks (14 times a year), we'll send you the Club's bulletin, *Things to Come,* describing the 2 coming Selections and a variety of Alternate choices. In addition, up to 4 times a year you may receive offers of special Selections, always at low Club prices. If you want the 2 Selections, you need do nothing; they'll be shipped automatically.

If you don't want a Selection, prefer an Alternate or no book at all, just fill out the convenient form always provided and return it to us by the date specified.

We allow you at least 10 days for making your decision. If you do not receive the form in time to respond within 10 days and receive an unwanted Selection, you may return it at our expense.

As a member you need buy only 4 books at regular low Club prices during the coming year. You may resign any time thereafter or continue to enjoy Club benefits for as long as you wish. One of the 2 Selections each month is only $4.98. Other Selections are higher, but always much less than hardcover publishers' editions—UP TO 65% OFF. The Club offers more than 400 books to choose from. Each volume, printed on our special presses, is produced on high-quality acid-free paper. A shipping and handling charge is added to all shipments. Send no money now, but do mail the coupon today!

SCIENCE FICTION BOOK CLUB®

Dept. CS-165, Garden City, NY 11535

I want the best SF in or out of this world! Please accept my application for membership in the Science Fiction Book Club. Send me the 5 books I have numbered in the boxes below, and bill me just $1 (plus shipping and handling). I agree to the Club Plan as described in this ad. I will take 4 more books at regular low Club prices in the coming year and may resign any time thereafter. SFBC offers serious works for mature readers.

1.	2.	3.	4.	5.

Mr.
Ms. _____
(Please print)

Address _____ Apt. # _____

City _____

State _____ Zip _____

If under 18, parent must sign. _____

The Science Fiction Book Club offers its own complete hardbound editions sometimes altered in size to fit special presses and save you even more. Members accepted in U.S.A. and Canada only. Canadian members will be serviced from Canada. Offer slightly different in Canada. 38-S050

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

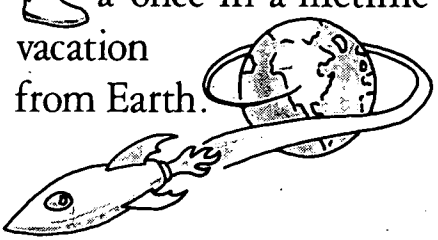
PACK YOUR LASERS,

your dragon hunting blade, your

alien detector, your pet robot

and your galoshes

and take a once-in-a-lifetime vacation from Earth.



Take any 5 books for $1 with membership.

SEE OTHER SIDE FOR ADDITIONAL SELECTIONS.

SCIENCE FICTION BOOK CLUB®

38-S050

▲Exclusive hardcover edition.

★ Explicit scenes and/or language may be offensive to some.

†Copyright © 1986 Paramount Pictures Corporation All Rights Reserved
STAR TREK is a Registered Trademark of Paramount Pictures Corporation

2915 Pub. ed. $17.95
Club ed. $4.98

3350 Pub. ed. $19.95
Club ed. $6.98

3160 Pub. ed. $16.95
Club ed. $5.98

2519 Pub. ed. $15.95
Club ed. $6.98

★ 3491 Spec. ed. ▲
Club ed. $4.98

1382 Pub. ed. $14.95
Club ed. $5.98

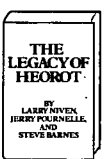
3665 Pub. ed. $16.95
Club ed. $5.50

3657 Pub. ed. $16.95
Club ed. $4.98

†3541 Spec. ed. ▲
Club ed. $5.98

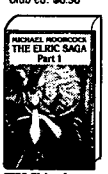
★ 3384 Pub. ed. $15.95
Club ed. $4.98

2451 Spec. ed. ▲
Club ed. $8.98



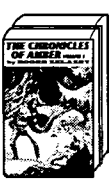
3566 Pub. ed. $17.95
Club ed. $5.98

1420 Includes the First, Second, and Third Books.
Spec. ed. ▲
Club ed. $7.98



0752 Elric of Melnibone; The Sailor on the Seas of Fate; The Weird of the White Wolf.
Spec. ed. ▲
Club ed. $6.98

1172 The Vanishing Tower; The Bane of the Black Sword; Stormbringer.
Spec. ed. ▲
Club ed. $7.98



0075 The First 5 Amber Novels.
2 vols. Comb. pub. ed. $32.30
Club ed. $8.98

★ 2345 The Moment of the Magician; The Paths of the Perambulator; The Time of the Transference.
Spec. ed. ▲
Club ed. $7.98

2923 The Peace War; Marooned in Realtime.
Comb. pub. ed. $34.90
Club ed. $6.98

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED